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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 10 IN SET 230

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DENVER, COLORADO

Silvertone Models 2276, 2277 (Ch. 456.150-14, -18), 3276 and 3277 (Ch. 456.150-61) are covered in Photofact Folder 10 — Set 230.

Several models and chassis are included in the Silvertone 456.150 series chassis. A complete list of all the models, with the chassis used in each is given below.

MODEL	TV CHASSIS	RADIO CHASSIS
1260	456.150, -2, -6, -15	
1261	456.150, -2, -21	
1266	456.150, -2, -6, -15	
1268	456.150-1, -11, -81	
1270	456.150-1, -11	
1271	456.150-1, -11	
1272	456.150-1, -11, -81	
1273	456.150-1, -11	
1274	456.150-1, -11	
1275	456.150-1, -11	
1297	456.150-3	
1298	456.150-3	
1299	456.150-7, -9, -17	
2260	456.150-6, -15	
2264	456.150-11, -81	
2265	456.150-11, -81	
2266	456.150-11, -81	
2276	456.150-8, -14, -18	456.155
2277	456.150-8, -14, -18	456.155
2278	456.150-11, -81	456.860-1
2279	456.150-11, -81	456.860-1
2280	456.150-6, -13	
2286	456.150-6, -15	
2287	456.150-6, -15	
2289	456.150-9, -12, -17	
2290	456.150-9, -17	
2297	456.150-81	
2298	456.150-81	
3260	456.150-19, -81	
3261	456.150-19, -81	
3263	456.150-16	
3268	456.150-19, -81	
3271	456.150-19, -81	
3272	456.150-19, -81	
3273	456.150-19, -81	
3274	456.150-19, -81	
3275	456.150-19, -81	
3276	456.150-22, -61	456.155
3277	456.150-22, -61	456.155
3280	456.150-19, -81	
3289	456.150-16	
3290	456.150-16	
3295	456.150-19, -81	
3296	456.150-19, -81	
3297	456.150-19, -81	
3298	456.150-16	
3299	456.150-16	
4114W	456.150-19, -81	
4120	456.150, -2	

A schematic of the 456.155 radio chassis is given on page 17 in Photofact Folder 10 — Set 230. For service information on radio chassis 456.860-1 refer to Photofact Folder 11 — Set 162.

A chart is given below which shows the picture tube and tuner used in each chassis. A complete list of all the variations for each chassis follows.

CHASSIS	PICTURE TUBE	TUNER
456.150	20CP4	PMB-57001
456.150-1	21AP4	PMB-57001
456.150-2	20CP4	PMB-57001

(CON'T. ON REVERSE SIDE)

SILVERTONE CHASSIS 456.150, -1, -2, -3, -6, -7, -8, -9, -11, -12, -13, -14, -15, -16, -17, -18, -19, -21, -22, -61, -81

PRODUCTION CHANGES
BULLETIN 118

PRODUCTION CHANGES
BULLETIN 118

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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CHASSIS	PICTURE TUBE	TUNER
456.150-3	21MP4	PMB-57001
456.150-6	20HP4 or 20MP4	PMB-57003 or PMB-57001
456.150-7	17HP4	PMB-57003
456.150-8	20HP4 or 20MP4	PMB-57003
456.150-9	17HP4	PMB-57001
456.150-11	21AP4	PMB-57002, -1
456.150-12	17HP4	PMB-57001
456.150-13	20HP4 or 20MP4	PMB-57001
456.150-14	20HP4 or 20MP4	PMB-57001
456.150-15	20HP4 or 20MP4	PMB-57002, -1
456.150-16	17HP4	PMB-57002, -1
456.150-17	17HP4	PMB-57003
456.150-18	20HP4 or 20MP4	PMB-57001
456.150-19	21YP4 or 21AFP4	PMB-57002-1
456.150-21	20CP4	PMB-57002, -1
456.150-22	21YP4 or 21AFP4	PMB-57002-1
456.150-61	21MP4	PMB-57002-1
456.150-81	21MP4	PMB-57002, -1

The schematic for the PMB-57001 tuner is given on page 16 in Photofact Folder 10 — Set 230. The schematic for the PMB-57002 tuner is included with the main schematic on page 2 in Photofact Folder 10 — Set 230. A schematic of the PMB-57002-1 tuner is given in Fig. 1 in this bulletin A schematic of the PMB-57003 tuner is given in Fig. 2 in this bulletin.

Ch.456.150-1, -2

Chassis 456.150-1, -2 are identical to chassis 456.150-61, covered in Photofact Folder 10 — Set 230, except for the following:

The AM tuner and adaptor socket are omitted in chassis 456.150-1, -2 and a TV-Phono switch and color socket are added. A partial schematic is given in Fig. 3 which shows this circuit.

When the AM adaptor socket is omitted the following changes were also made.

R28 and R29 were replaced by a single 1KΩ resistor and connected to 135V.

C58 was omitted.

The alternate horizontal output circuit, shown on the schematic in Folder 10 — Set 230, as being used in earlier production is used in chassis 456.150-1, -2. In chassis 456.150-1 the 100MMF capacitor, connected between terminals 1 and 4 of the horizontal output transformer is changed to 470MMF.

Chassis 456.150-1 uses a 21AP4 picture tube and chassis 456.150-2 uses a 20CP4 picture tube. When the magnetic focus picture tube is used,the connection to pin 10 of V21 is omitted, pin 6 is connected to 275V. and focus magnet #PMB-56008 is used instead of centering magnet #PMB-56012.

Chassis 456.150-1, -2 use the PMB-57001 tuner.

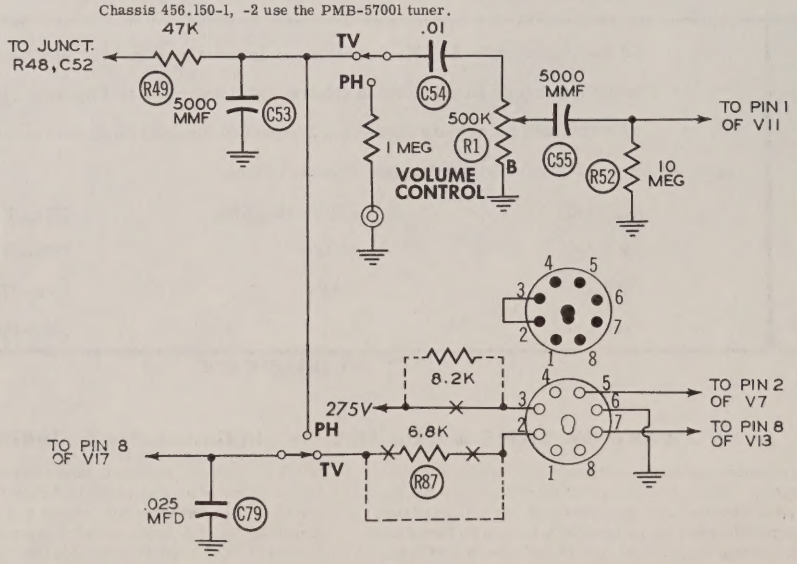

FIG. 3

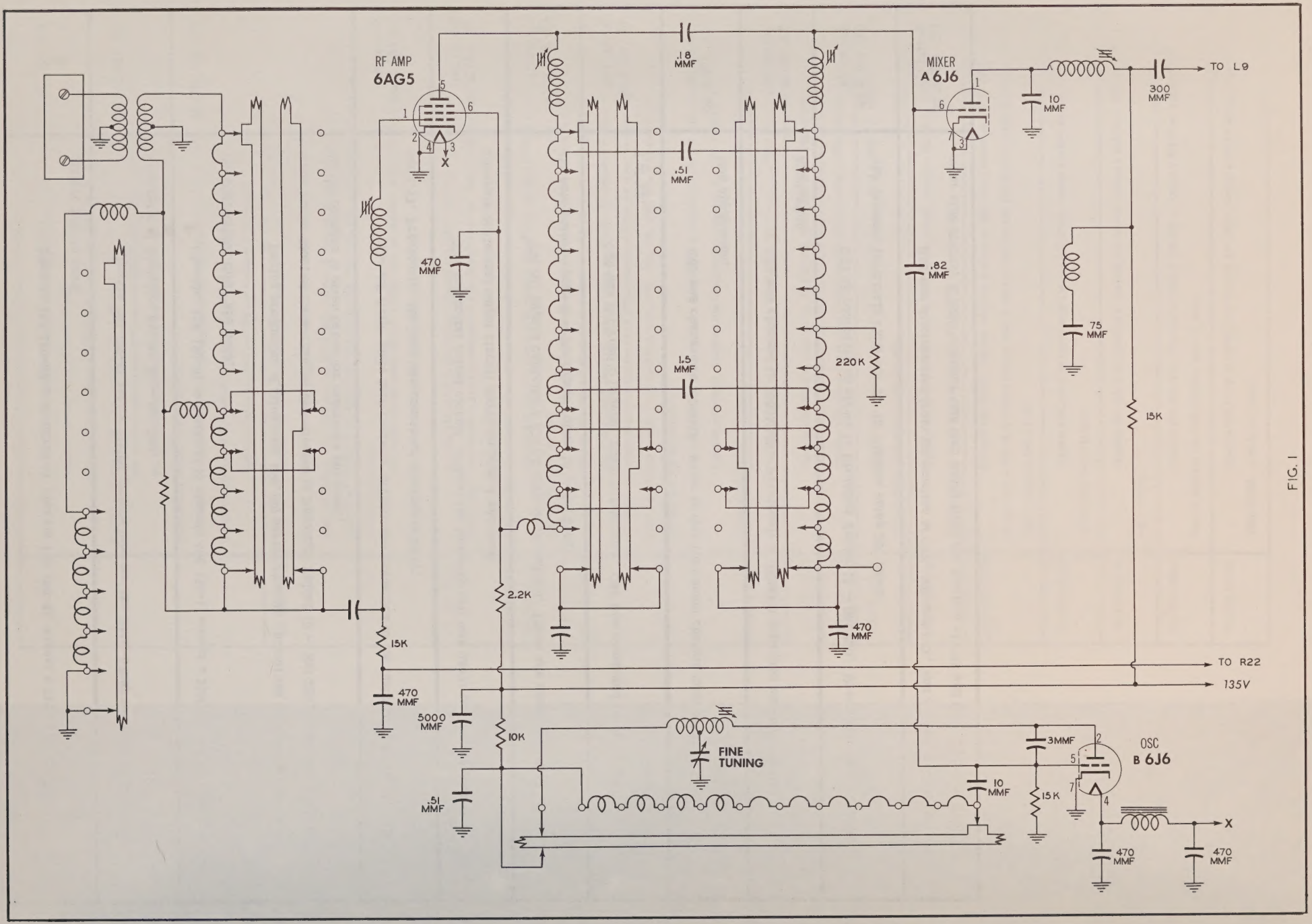
RF AMP
6AG5
MIXER
A 6J6
OSC
B 6J6
.18 MMF
.51 MMF
1.5 MMF
.82 MMF
470 MMF
2.2K
15K
220K
10 MMF
300 MMF
75 MMF
TO L9
TO R22
135V
5000 MMF
10K
FINE TUNING
.51 MMF
3MMF
X

FIG. 1

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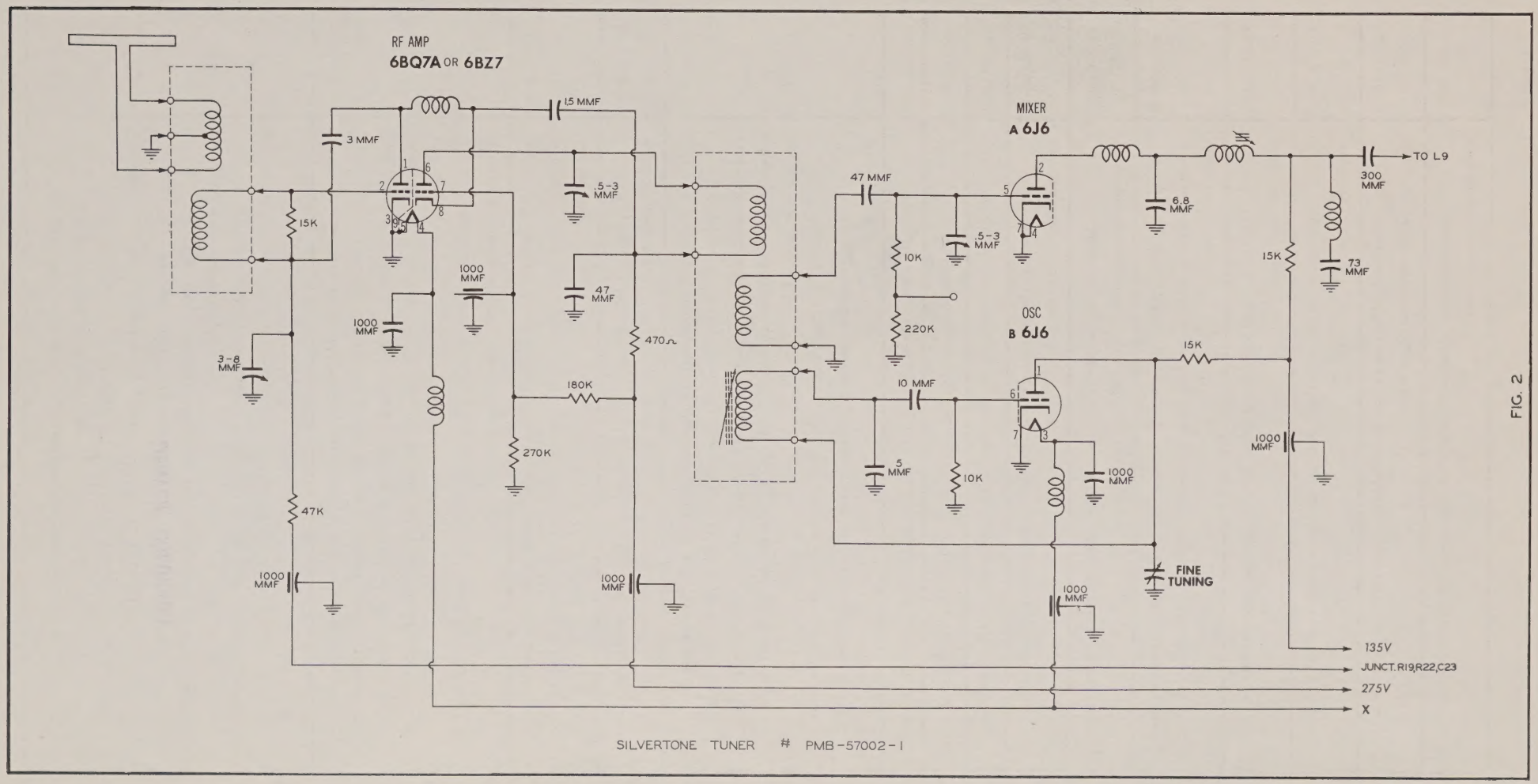
Ch. 456.150	Chassis 456.150 is identical to chassis 456.150-2 except for the following: R43 was reduced from 390KΩ to 220KΩ. R87 was increased from 6.8KΩ to 8.2KΩ and connected from pin 3 of the color socket to 275V as shown in the dotted lines in Fig. 3 above. The vertical hold control (R6) was reduced from 1.5Meg to 1Meg (Part #PMA-48014-4). The 47MMF peaking capacitor, connected across the horizontal winding of the yoke (T5), was increased to 56MMF in Ch. 456.150. A 6S4 vertical output tube is used in Ch. 456.150. The circuit remains the same except R71 is omitted when the single triode tube is used and R69 is increased from 1Meg to 2.2Meg. R96 is not used and C87 and C88 are included in the chassis.
Ch. 456.150-3	Chassis 456.150-3 is identical to chassis 456.150-1 except for the following: The ½ of a 12AX7 tube (V6) used as noise suppressor in chassis 456.150-1 is used as AF Amp. in chassis 456.150-3 and the 6AV6 (V11), formerly used as AF Amp, is omitted. When the noise suppressor circuit is not used C42, C43, C45, C46, R3, R30, R31, R32 and R36 are omitted and pin 6 of V14 is grounded. The audio circuit using the ½ of a 12AX7 tube is identical to the one using the 6AV6 tube, except the phono socket and the TV-Phono switch are omitted.
Ch. 456.150-6	Chassis 456.150-6 is identical to chassis 456.150-1, except a 20HP4 or 20MP4 electrostatic focus picture tube is used. Early production of this chassis used the PMB-57003 tuner, later production used the PMB-57001 tuner.
Ch.456.150-7	Chassis 456.150-7 is identical to chassis 456.150-3, except a 17HP4 picture tube and the PMB-57003 tuner is used.
Ch. 456.150-8	Chassis 456.150-8 is identical to chassis 456.150-61, except for the following: The ½ of a 12AX7 tube (V6) used as noise suppressor in chassis 456.150-61 is used as AF Amp. in chassis 456.150-8 and the 6AV6 (V11), formerly used as AF Amp, is omitted. When the noise suppressor circuit is not used C42, C43, C45, C46, R3, R30, R31, R32 and R36 are omitted, and pin 6 of V14 is grounded. The audio circuit using the ½ of a 12AX7 tube is identical to the one using the 6AV6 tube. A 20HP4 or 20MP4, electrostatic focus, picture tube and the PMB-57003 tuner is used in chassis 456.150-8.
Ch.456.150-9	Chassis 456.150-9 is identical to chassis 456.150-1, except a 17HP4 picture tube is used.
Ch. 456.150-11	Chassis 456.150-11 is identical to chassis 456.150-1, except the PMB-57002, -1 tuner is used.
Ch. 456.150-12	Chassis 456.150-12 is identical to chassis 456.150-3, except a 17HP4 picture tube is used.
Ch.456.150-13	Chassis 456.150-13 is identical to chassis 456.150-1, except a 20HP4 or 20MP4, electrostatic focus, picture tube is used.
Ch.456.150-14	Chassis 456.150-14 is identical to chassis 456.150-61, except a 20HP4 or 20MP4, electrostatic focus, picture tube and the PMB-57001 tuner is used.
Ch. 456.150-15, -16	Chassis 456.150-15, -16 are identical to chassis 456.150-1, except the PMB-57002 tuner is used and a 20HP4 or 20MP4 picture tube is used in chassis 456.150-15 and a 17HP4 picture tube is used in chassis 456.150-16.
Ch.456.150-17	Chassis 456.150-17 is identical to chassis 456.150-1, except a 17HP4 picture tube and the PMB-57003 tuner is used.
Ch.456.150-18	Chassis 456.150-18 is identical to chassis 456.150-61, except a 20HP4 or 20MP4 picture tube is used.
Ch. 456.150-19	Chassis 456.150-19 is identical to chassis 456.150-1, except a 21YP4 or 21AFP4 picture tube is used and the PMB-57002-1 tuner is used.
Ch.456.150-21	Chassis 456.150-21 is identical to chassis 456.150-1, except a 20CP4 picture tube and the PMB-57002, -1 tuner are used.

Ch.456.150-22	Chassis 456.150-22 is identical to chassis 456.150-61, except a 21YP4 or 21AFP4 picture tube is used.
Ch.456.150-61	Chassis 456.150-61 uses a 21MP4 picture tube and the PMB-57002 tuner as shown on the schematic in Photofact Folder 10 — Set 230.
Ch.456.150-81	Chassis 456.150-81 is identical to chassis 456.150-1, except a 21MP4 picture tube and the PMB-57002 tuner are used. During production of Silvertone 456.150 series chassis numerous production changes were made. Most of these changes are covered in Photofact Folder 10 — Set 230; however, a list of all the changes is given below for reference purposes.
Serial No. 39,829 & up	The AF Amp. plate load resistor (R53A) was connected to the junction of R55, T6, C1B and C57. Previously, the lead was connected directly to 260V.
Serial No. 46, 265 & up	The horizontal output circuit, without the linearity coil was used; previous to this the alternate horizontal output circuit shown on page 2 was used.
Serial No. 46, 890 & up	The AC bypass capacitors (C87 & C88) were omitted. These are shown in dotted lines on the schematic on page 2 — Photofact Folder 10 — Set 230.
Serial No. 47, 611 & up	C49 was returned to ground, prior to this time. C49 was connected from pin 6 to pin 7 of V9.
Serial No. 57, 859 & up	C83 was changed to 100MMF. Prior to this time some chassis used 470MMF in this application.
Serial No. 89, 351 & up	C60 was changed to 2000MMF. Previously a .02MFD capacitor was used in this application.
Serial No. 93, 801 & up	C83 as connected as shown in Photofact Folder 10 — Set 230. Previously this capacitor was between terminals 1 and 4 of T3 in chassis using 20" tubes.
Serial No. 105, 801 & up	R83 was disconnected from the junction of C78, R81 and L21, and reconnected on the other side of C78. A 150Ω resistor was then added from the junction of C78 and R83 to pin 1 of V17.



SILVERTONE TUNER # PMB-57002-1

FIG. 2

PHOTOFACT* Folder

AIRLINE MODELS BR-4000A, BR-4001A, BR-4003A, BR-4005A

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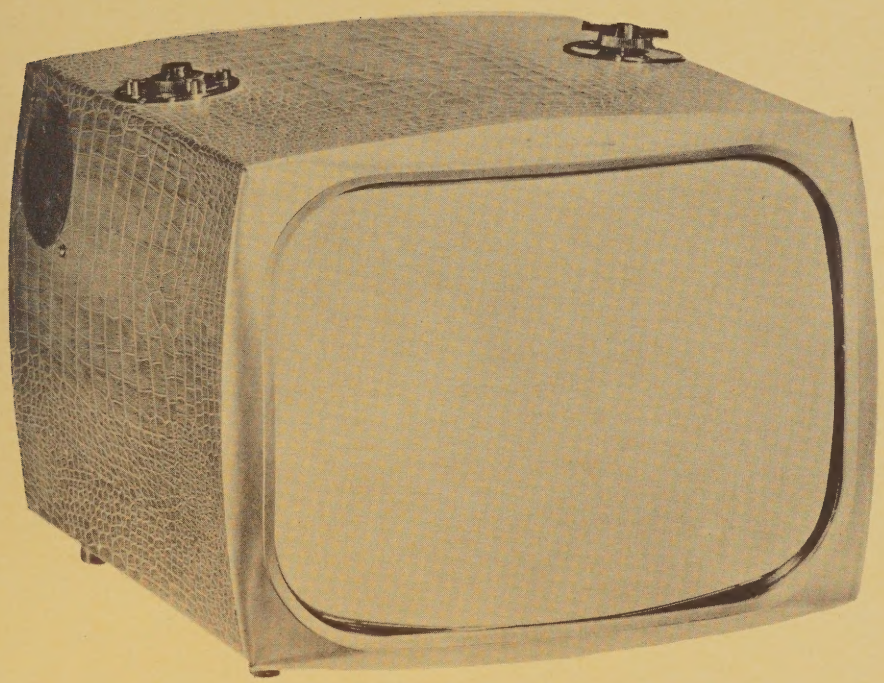
Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



MODEL BR-4005A

AIRLINE MODELS BR-4000A, BR-4001A, BR-4003A, BR-4005A

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DATE 3–55 SET 270 FOLDER 2

PHOTOFACT* Folder
*TRADE MARK

AIRLINE MODELS BR-4000A, BR-4001A, BR-4003A, BR-4005A

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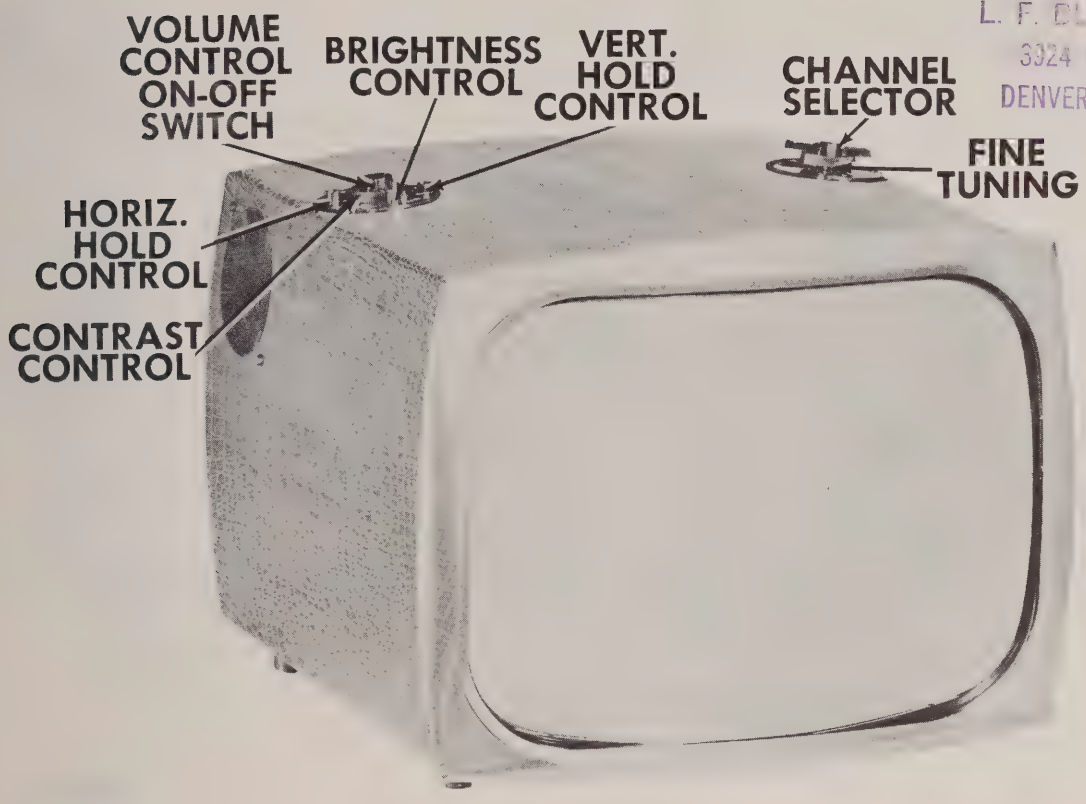

AIRLINE MODEL BR-4005A

TRADE NAME	Airline Models BR-4000A, BR-4001A, BR-4003A, BR-4005A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Fifteen

POWER SUPPLY 105-115 Volts AC - 60 Cycle RATING 1.38 Amp. @ 115 Volts AC
TUNING RANGE—Channels 2 thru 13, Video IF 26.75MC, Sound IF 22.25MC (Intercarrier)

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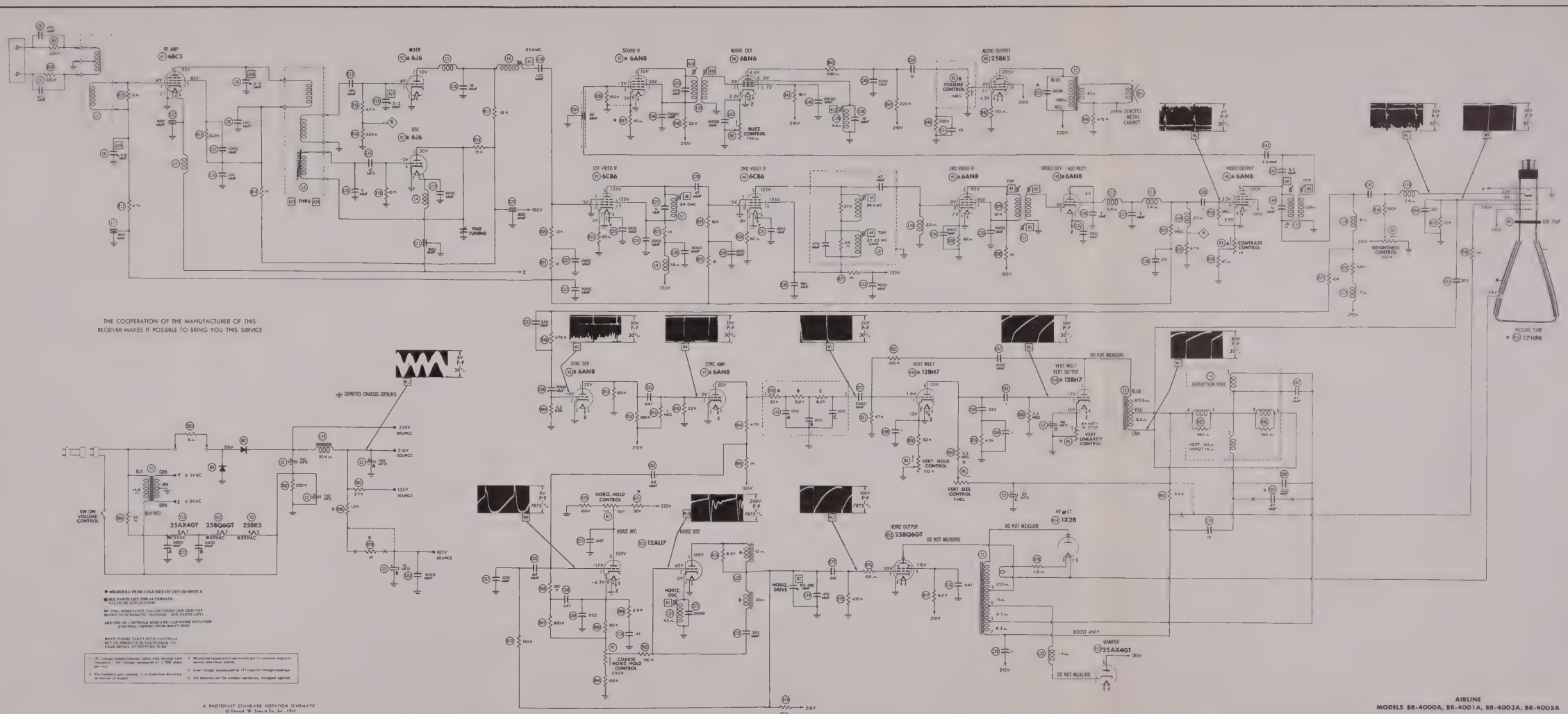
DATE 3-55 SET 270 FOLDER 2

AIRLINE MODELS BR-4000A, BR-4001A, BR-4003A, BR-4005A



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

● MEASURED FROM COLD SIDE OF OFF-ON SWITCH

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC CTRL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM. SEE PARTS LIST.

ARROWS ON ↕ CONTROLS INDICATE ↻ CLOCKWISE ROTATION ↺ CONTROL VIEWED FROM KNOB END

■ WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1 000 ohms per volt
2. Pin numbers are counted in a clockwise direction as bottom of socket
3. Measured values are from socket pin to common negative source unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation, unless otherwise stated.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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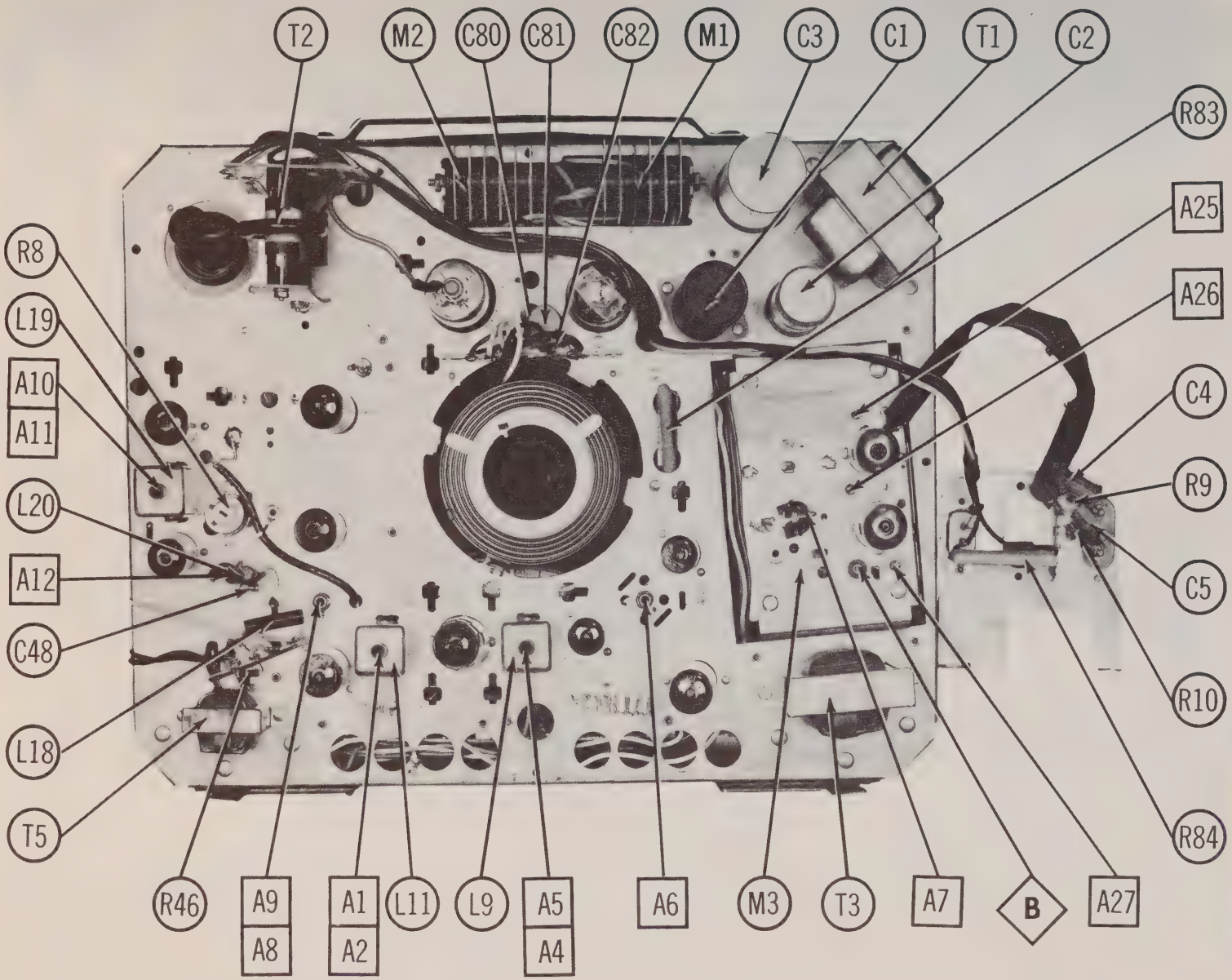
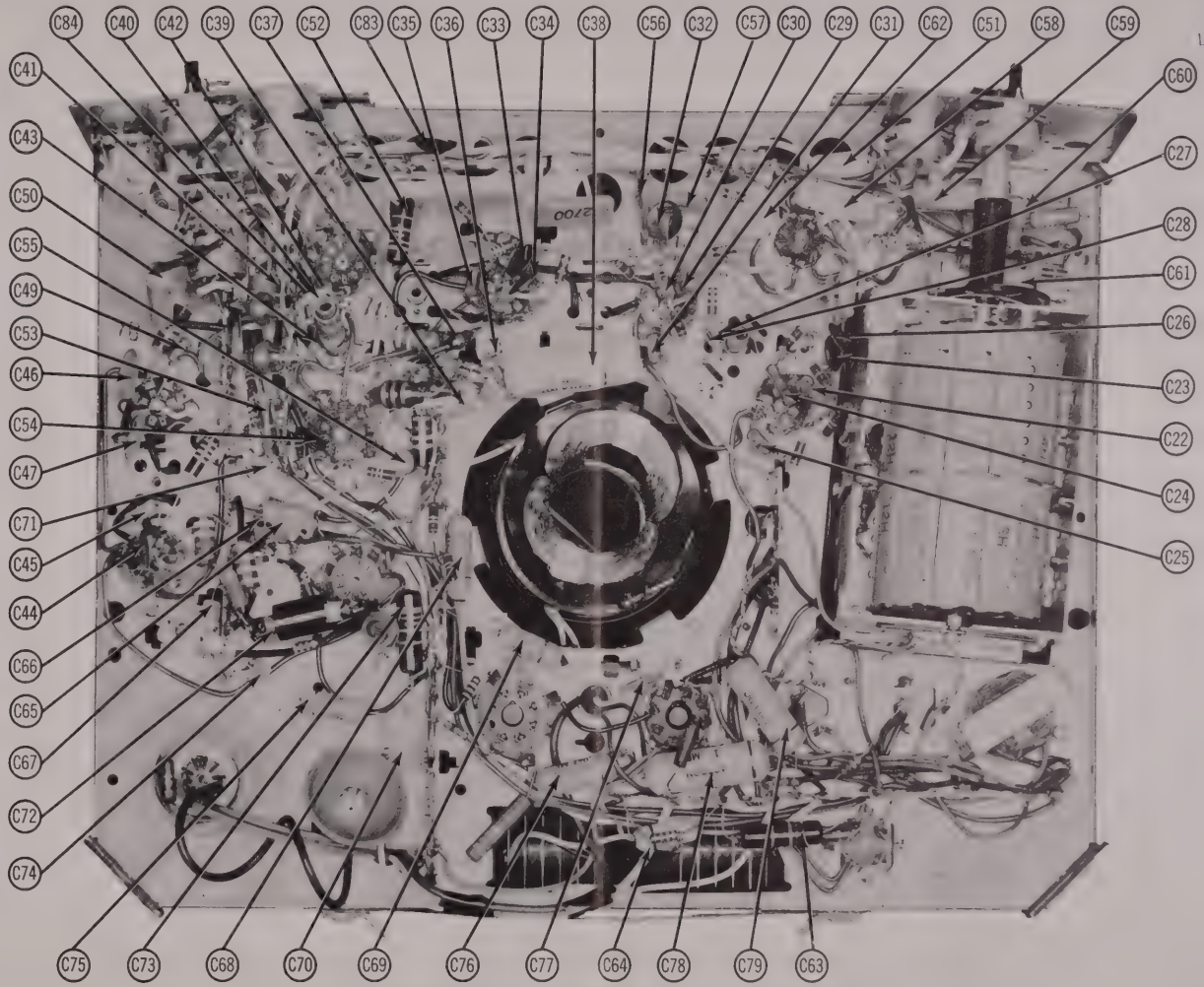
AIRLINE
MODELS BR-4000A, BR-4001A, BR-4003A, BR-4005A

AIRLINE
MODELS BR-4000A, BR-4001A, BR-4003A, BR-4005A



CHASSIS TOP VIEW

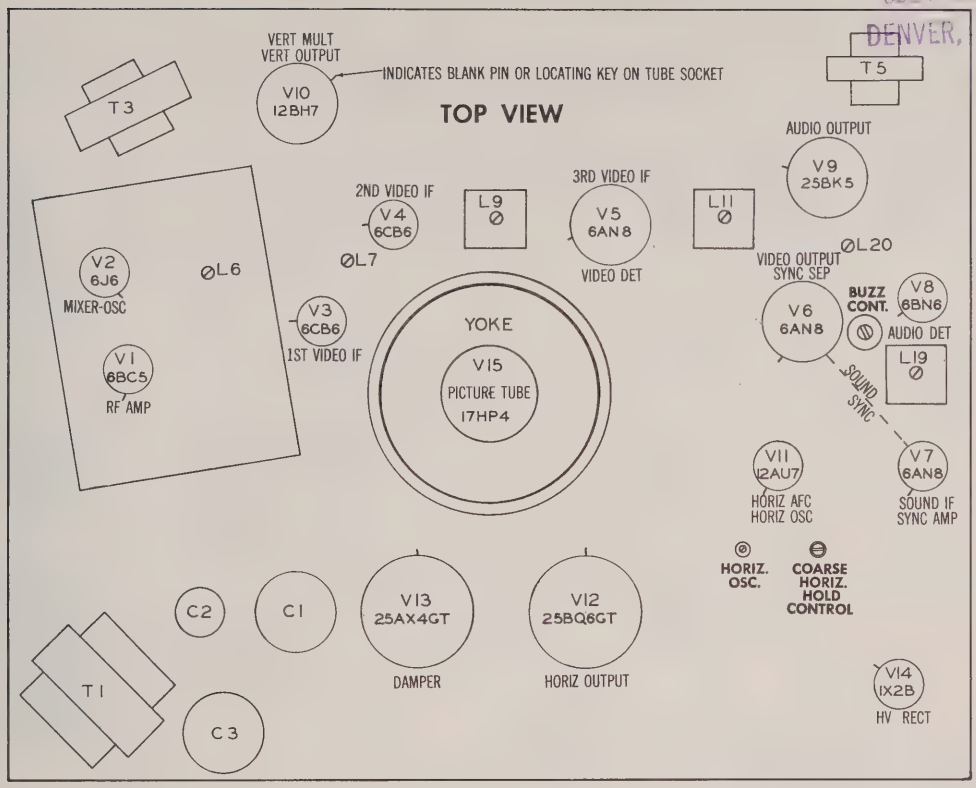
DENVER, COLORADO



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

TUBE PLACEMENT CHART

PRO...
L F BL... ...NP
3921 M... ...
DENVER, COLORADO



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

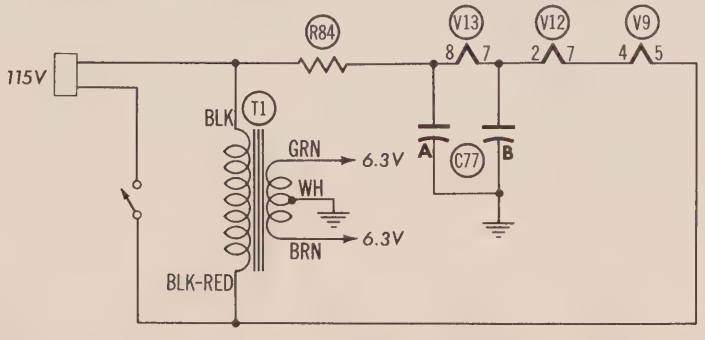
POWER SUPPLY FAILURE
No raster, no sound - Selenium Rectifiers (M1 & M2)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - V2, V3, V4, V5, V6
No pic, no sound, has snow - V1, V2, V3
No pic, has sound, has raster - V15
Has pic, no sound - V7, V8, V9

SYNC FAILURE
No vert. sync - V7, V10
No horiz. sync - V7, V11
No vert. or horiz. sync - V6, V7

SWEEP FAILURE
No raster, has sound - V11, V12, V13, V14, V15
No vertical deflection - V10
Poor vert. linearity or foldover - V10
Poor horiz. linearity or foldover - V11, V12, V13
Narrow picture - V11, V12, V13, V14, M1, M2
Vert. off freq. - V7, V10
Horiz. off freq. - V7, V11

NOTE: Since this receiver employs tubes used in series-parallel filament network, an open filament in any tube in series may cause the set to be inoperative. (See circuit below).



AIRLINE
MODELS BR-4000A, BR-4001A, BR-4003A, BR-4005A

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use an isolation transformer to protect the test equipment.
The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube (V11) to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect a .001MFD capacitor across the vertical input terminals of oscilloscope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to pin 8 (grid) of 6AN8 (V5). Low side to chassis.	25MC (10MC Swp)	23.9MC 26.3MC	Any	Vert. amp. thru 10KΩ to point (A). Low side to chassis.	A1 A2 A3	Connect a short jumper from pin 5 (plate) to pin 6 (screen) of 6CB6 (V4). Adjust for response similar to Fig. 1 with markers at 90%. A3 is a coupling rod and affects band width. Remove short from pin 5 to pin 6 of V4.
2.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	Not used	22.25MC (Unmod.)	"	Use VTVM DC probe to point (A). Common to chassis.	A4	Adjust for minimum deflection.
3.	"	"	"	26.5MC	"	"	A5	Adjust for maximum deflection. Attenuate generator output to maintain not more than 2 volts at VTVM. Repeat step 2.
4.	"	"	"	24.0MC	"	"	A6	Adjust for maximum deflection. Attenuate generator output to maintain not more than 2 volts at VTVM.
5.	"	"	"	25.0MC	"	"	A7	"
6.	"	"	25MC (10MC Swp)	21.3MC 23.8MC 26.65MC	"	Vert. amp. thru 10KΩ to point (A). Low side to chassis.		Check for response curve similar to Fig. 2. Rock A7 for flat response. Increase sweep generator output and use high scope gain to view 22.25MC trap region. Adjust A4 so that 21.3MC occurs at peak of pop-up portion preceeding trap notch. 22.25MC should fall in trap notch. If response obtain is not similar to Fig. 2, repeat steps 1 thru 6.

SOUND IF ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Tune in a TV signal and adjust the fine tuning control until sound bars just appear in the picture. Adjust A8 fully counter clockwise, then clockwise until the horizontal scanning lines are smooth and continuous. Readjust the fine tuning control for clearest picture and best sound.
Insert an attenuator in series with the antenna and the receiver antenna terminals so that the signal strength may be varied from weak to strong. If a suitable attenuator is not available stray feed the signal to the receiver by placing the antenna lead-in near the antenna terminals.
Reduce the signal input to the receiver so that the signal falls below the limiting level of the 6BN6 limiter-detector as evidenced by a "hiss" in the sound. Adjust the secondary of the sound take-off transformer (A9), the sound IF transformer (A10 and A11), the quadrature coil (A12) and the buzz control (R8) for maximum sound and minimum buzz. If hiss disappears while adjusting increase attenuation until hiss reappears.

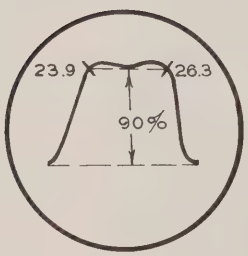


FIG. 1

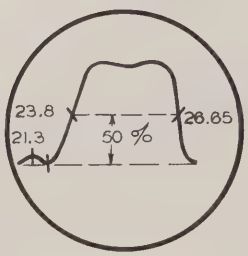


FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

MEADE ST
DENVER, COLORADO

OSCILLATOR ALIGNMENT

The channel oscillator adjustment screws are reached thru a hole just to the left of the fine tuning shaft. The correct oscillator adjustment screw is accessible thru this hole as the channel switch is turned to each channel. Connect the negative lead of a 1.5 volt bias battery to the ungrounded side of C38.
Connect the positive side to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193. 25MC 197. 75MC	10	Vert. amp. thru 10KΩ to point (A). Low side to chassis.	A13	Adjust to place sound marker in trap notch as in Fig. 3. Use high scope gain and increase sweep generator output to view trap region. Video marker should fall at 50% on response curve.
			213MC (10MC Swp)	211. 25MC 215. 75MC	13		A14	
			207MC (10MC Swp)	205. 25MC 209. 75MC	12		A15	
			201MC (10MC Swp)	199. 25MC 203. 75MC	11		A16	
			189MC (10MC Swp)	187. 25MC 191. 75MC	9		A17	
			183MC (10MC Swp)	181. 25MC 185. 75MC	8		A18	
			177MC (10MC Swp)	175. 25MC 179. 75MC	7		A19	
			85MC (10MC Swp)	83. 25MC 87. 75MC	6		A20	
			79MC (10MC Swp)	77. 25MC 81. 75MC	5		A21	
			69MC (10MC Swp)	67. 25MC 71. 75MC	4		A22	
			63MC (10MC Swp)	61. 25MC 65. 75MC	3		A23	
			57MC (10MC Swp)	55. 25MC 59. 75MC	2		A24	

RF AND MIXER ALIGNMENT

Leave the bias battery connected as under "Oscillator Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω carbon resistors.	Across antenna terminals with 120Ω in each lead.	195MC (10MC Swp)	193. 25MC 197. 75MC	10	Vert. amp. thru 10KΩ to point (B). Low side to chassis.	A25, A26, A27	Adjust for response curve similar to Fig. 4 with markers above 90%.
9.	"	"	69MC (10MC Swp)	67. 25MC 71. 75MC	4	"		Check for response curve similar to Fig. 4. If markers fall below 70% on any channel, make slight compromise adjustments of A25, A26 and A27 with channel switch set to that channel. Recheck all other channels to see that they have not been seriously affected.
			213MC (10MC Swp)	211. 25MC 215. 75MC	13			
			207MC (10MC Swp)	205. 25MC 209. 75MC	12			
			201MC (10MC Swp)	199. 25MC 203. 75MC	11			
			189MC (10MC Swp)	187. 25MC 191. 75MC	9			
			183MC (10MC Swp)	181. 25MC 185. 75MC	8			
			177MC (10MC Swp)	175. 25MC 179. 75MC	7			
			85MC (10MC Swp)	83. 25MC 87. 75MC	6			
			79MC (10MC Swp)	77. 25MC 81. 75MC	5			
			63MC (10MC Swp)	61. 25MC 65. 75MC	3			
			57MC (10MC Swp)	55. 25MC 59. 75MC	2			

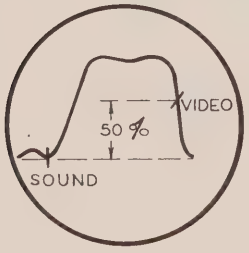


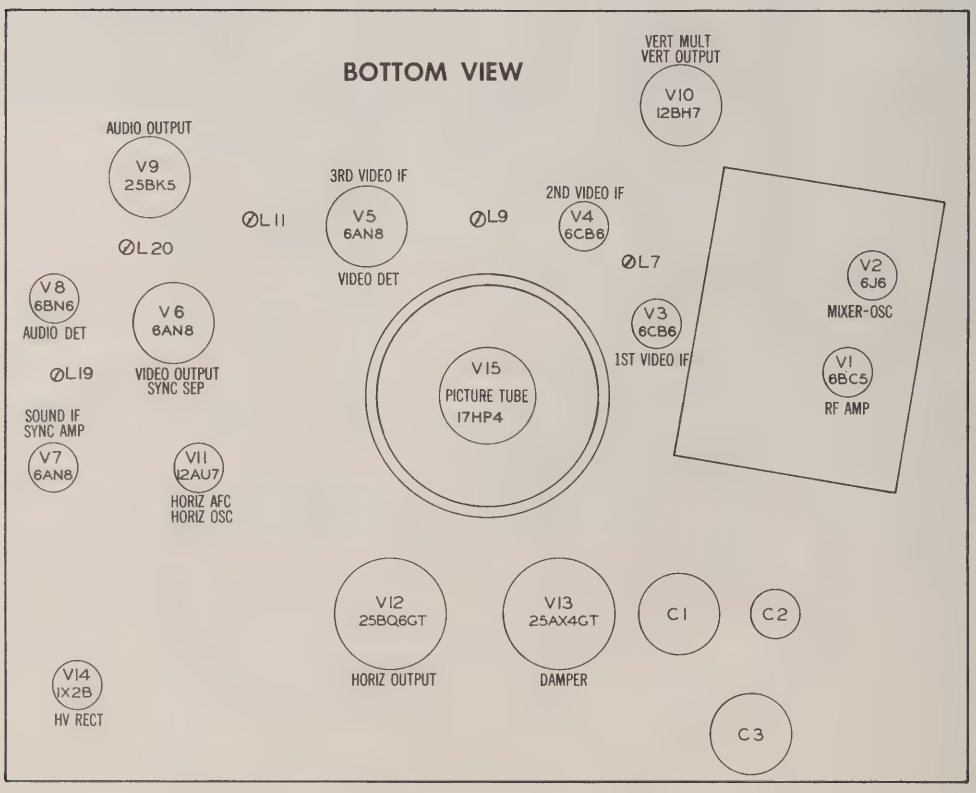
FIG. 3

FIG. 4

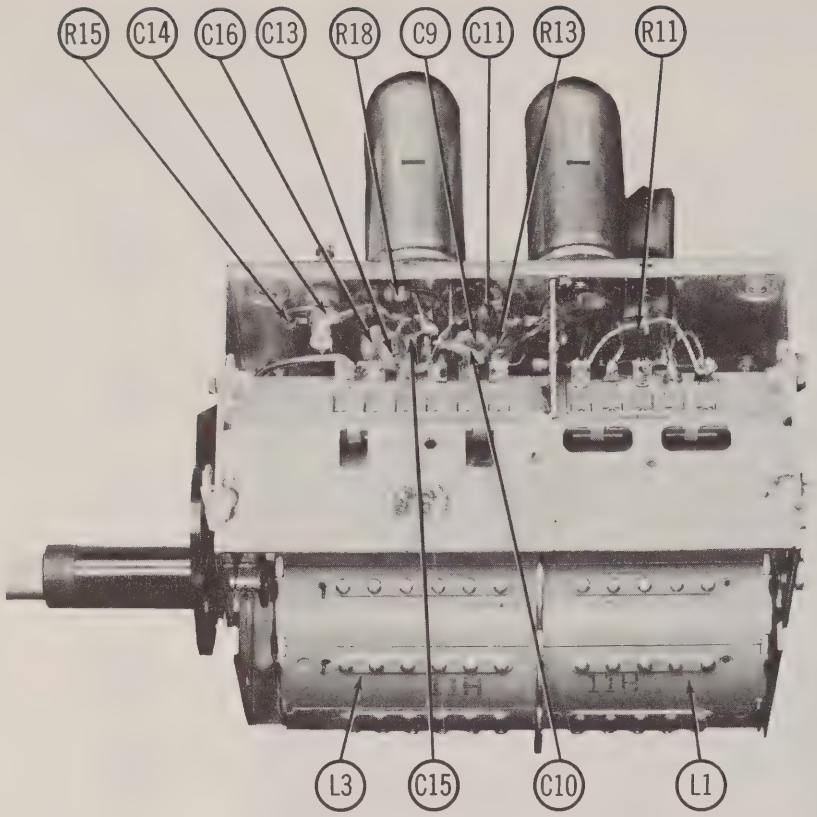
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BC5	1Meg	0Ω	0Ω	.1Ω	†3.5KΩ	†5.5KΩ	0Ω		
V 2	6J6	†17.5KΩ	†17.5KΩ	.1Ω	0Ω	225KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	47Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 4	6CB6	1Meg	62Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	0Ω		
V 5	6AN8	4.7KΩ	4.7KΩ	.2Ω	0Ω	.1Ω	†3.5KΩ	†3.5KΩ	2.3Ω	82Ω
V 6	6AN8	†120KΩ	2.2Meg	0Ω	0Ω	.1Ω	†5.6KΩ	†2.5KΩ	1Meg	300Ω
V 7	6AN8	†8.2KΩ	22KΩ	0Ω	0Ω	.1Ω	†33KΩ	†33KΩ	100KΩ	47Ω
V 8	6BN6	300Ω	.3Ω	0Ω	.1Ω	†18KΩ	5.4Ω	†220KΩ		
V 9	25BK5	†485Ω	INF	120KΩ	■22Ω	■0Ω	150Ω	120KΩ	†37Ω	INF
V 10	12BH7	▲4.5KΩ	2.2Meg	1KΩ	.1Ω	.1Ω	▲4.5Meg	47KΩ	120KΩ	0Ω
V 11	12AU7	†47KΩ	500KΩ	43Ω	0Ω	0Ω	†30KΩ	1.5Meg	400KΩ	.1Ω
V 12	25BQ6GT	INF	■39Ω	INF	†8.2KΩ	470KΩ	INF	■22Ω	0Ω	Top Cap ▲12Ω
V 13	25AX4GT	▲20Ω	INF	1Meg	INF	†37Ω	INF	■39Ω	■50Ω	
V 14	1X2B	PINS	1-8	HAVE	INFINITE	RESISTANCE				Top Cap ▲265Ω
V 15	17HP4	0Ω	22KΩ	Pin 6 †37Ω	Pin 10 ▲1KΩ	Pin 11 †100KΩ	Pin 12 .1Ω			

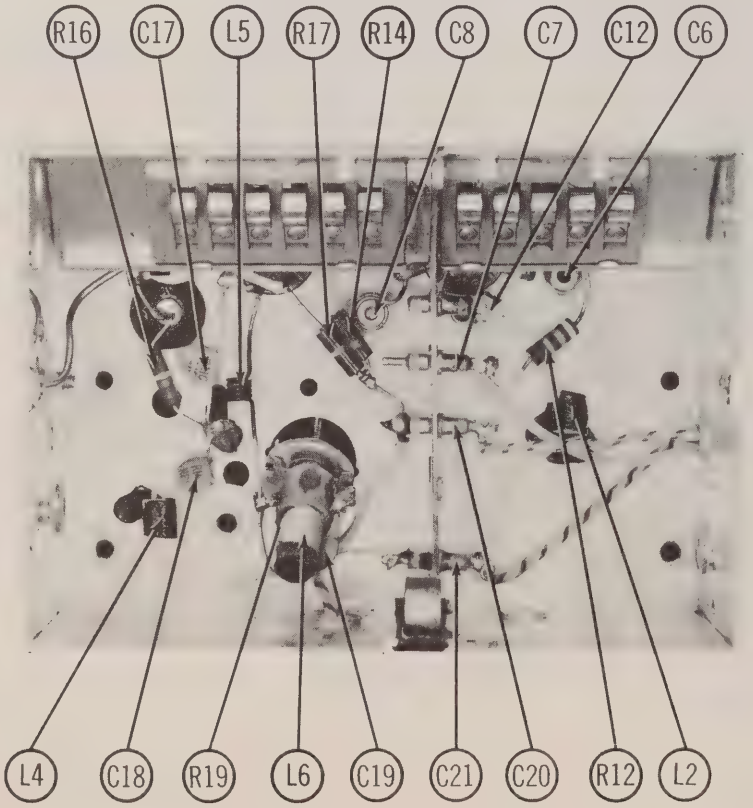
† MEASURED FROM OUTPUT OF M2.
▲ MEASURED FROM PIN 3 OF V13.
■ MEASURED FROM COLD SIDE OF OFF/ON SWITCH.



TUBE PLACEMENT CHART



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

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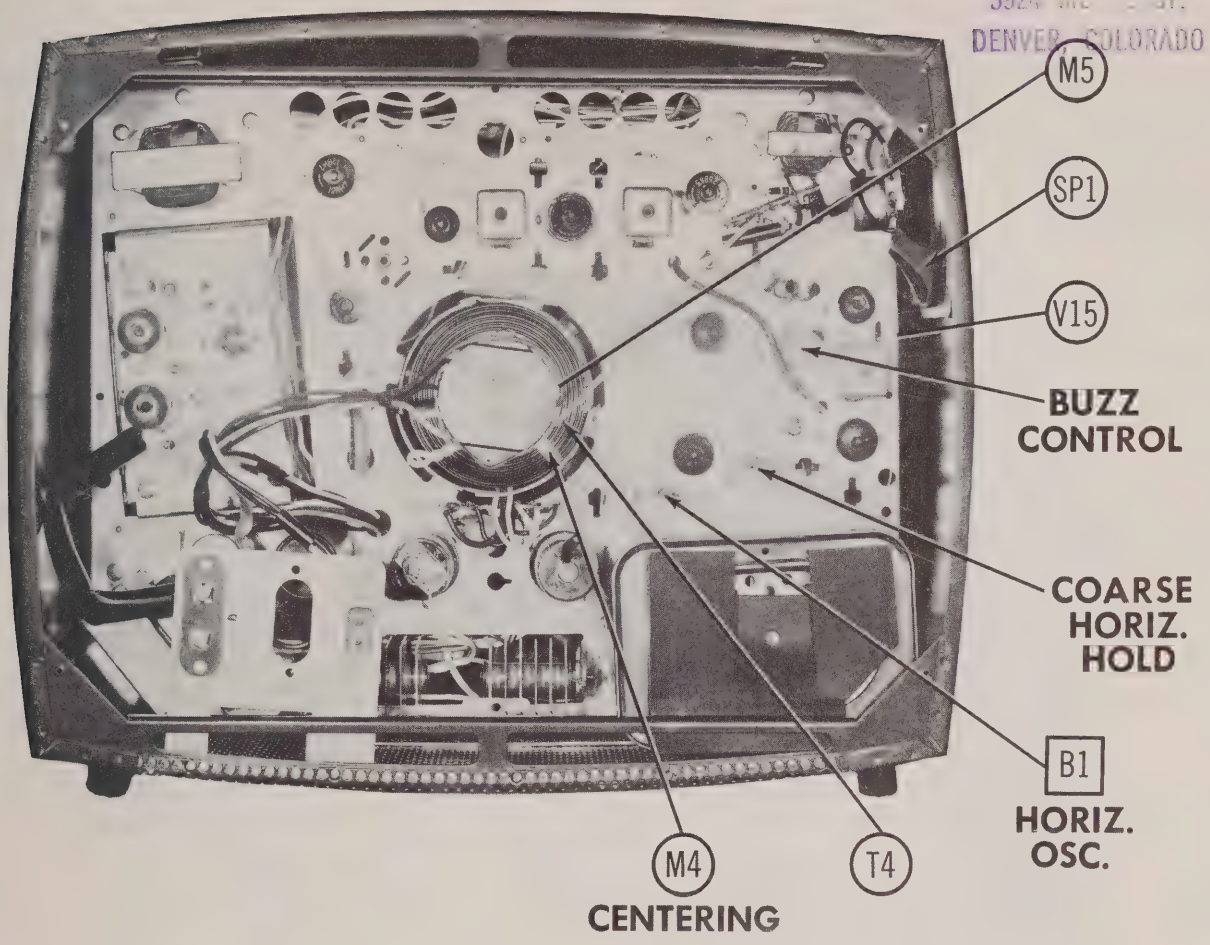


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

1. Set the horizontal hold control to its mid-range position and adjust the coarse horizontal hold control (R7A) for a steady picture.

2. Turn the horizontal hold control fully clockwise then fully counter clockwise noting the number of diagonal bars present on the screen. Adjust R7A until an equal number of diagonal bars are present on the screen at the extreme settings of the horizontal hold control. If this condition cannot be obtained proceed with step 3.

3. Turn the horizontal hold control fully counter clockwise. Turn R7A fully clockwise. Turn the horizontal oscillator coil slug (B1) counter clockwise until a squegging condition (breakup of raster) appears. Turn B1 clockwise until squegging stops. Turn B1 an additional two turns in a clockwise direction.

4. Set horizontal hold control and R7A to their mid-range positions and adjust B2 until picture synchronizes horizontally. Recheck holding action as in 1. and 2. above.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V12 and V13. Check M1 and M2. Check T2, T4A, R77, C76 and other associated components.

DRIVE LINES

Check by substitution V12 and V13. Check adjustment B2. Check T2, T4A, C75, C74, R77 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V12 and V13. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V11, V12 and V13. Check C69 for open. Check L21, C73, R70 and other associated components.

XMAS TREE EFFECT

Check by substitution V11, V12 and V13. Check T2 and T4A for internal arcing. Check L21, L22, C73, C72, C71, R71, R73 and other associated components.

VERTICAL

LOSS OF SWEEP

Substitute V10. Check waveform W6.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R63, C3C, and other associated components.	Check C61, C59, R62, R6 and other associated components.

INSUFFICIENT SWEEP

Substitute V10. Check vertical size and vertical linearity controls for proper operation. Check T3 and T4B.

COMPRESSED AT BOTTOM

Substitute V10. Check R6, R62, R59, C59 and other associated components.

COMPRESSED AT TOP

Substitute V10. Check R5, C3D, T3, T4B and other associated components.

FOLDS

Substitute V10. Check C59, C60, R59, R5 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V6 and V7. Check C53, C54, C55, R52, R55, R54 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V10. Check C57, C58, R4 and R58. Check vertical integrator network. Check video IF alignment for overloading.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Substitute V11. Check C65, C68, C71, R70, R1 and other associated components.

HORIZONTAL BENDING

Check by substitution V6, V7 and V11. Check AFC network.

VIDEO

LOSS OF VIDEO

Substitute V6. Check C40, C41, L17, L16, R35 and other components associated with V6.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture. Check video IF alignment.

POOR CONTRAST

Substitute V6. Check picture tube, contrast control, L14, R34 and other associated components.

NEGATIVE PICTURE

Substitute V6. Check video detector network, picture tube, C41 and other associated components.

SMEAR

Substitute V6. Check L17, L13, L12, C41, R35 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V3, V4, V5 and V6 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V7, V8 and V9. Check stage V10 using audio signal generator. Apply audio signal across R3B.

If Satisfactory	If Unsatisfactory
Check audio IF and audio detector stages for component failure or change of value.	Check C50, C52, R45, T5, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustments R8 and A12. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

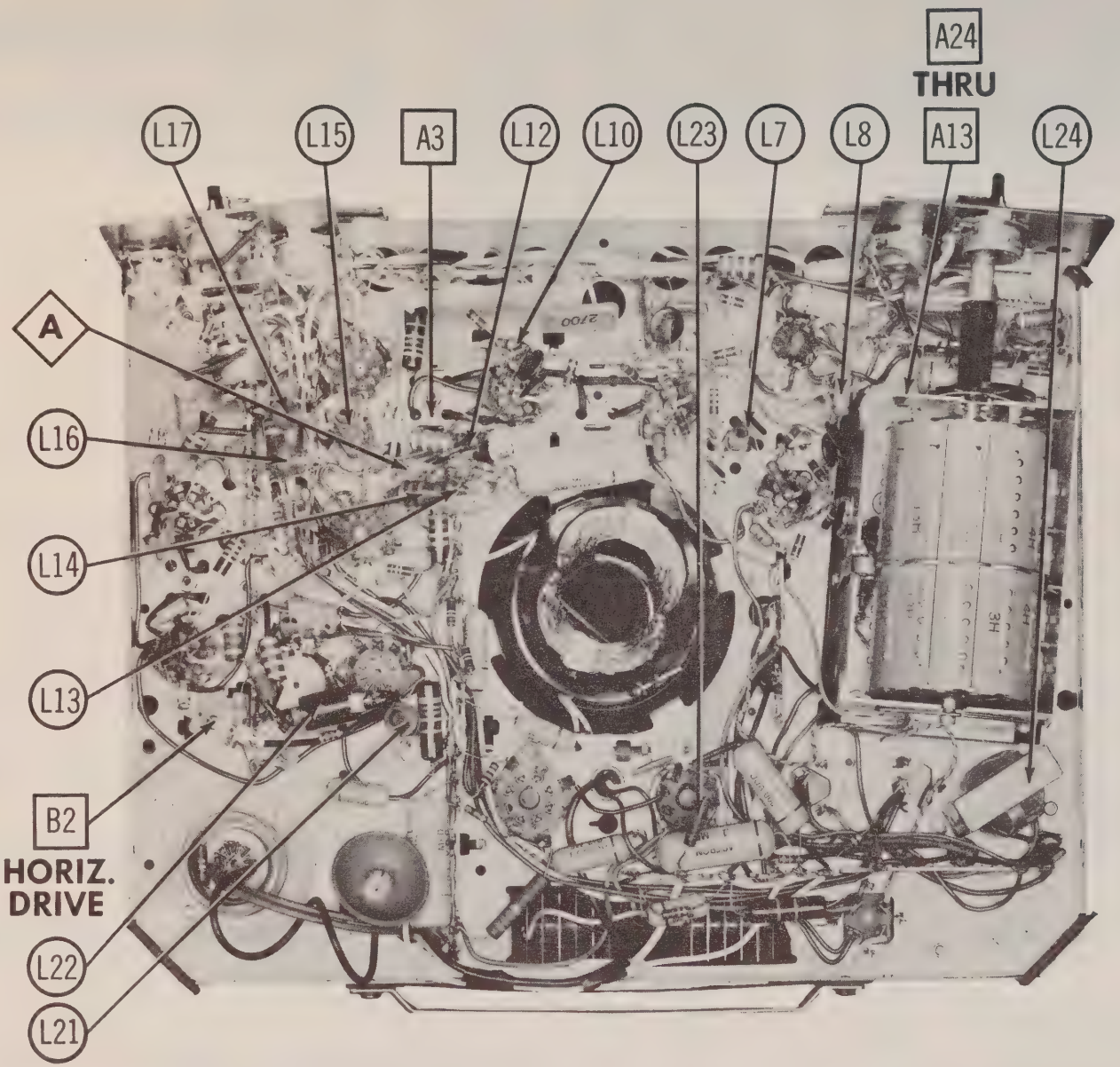
POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control T1 and R84. Tubes V9, V12 and V13 filaments are connected in series. V9, V12 and V13 will fail to light if anyone of the filaments are open. If filaments light, check M1 and M2. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check M1, M2, R84 and R83. Check B+ filter and decoupling network.



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L. F. R. ENGINEERING
DEPT.

PROPERTY OF
L. F. BLANKSHIP
3924 MAIN ST.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	STANDARD REPLACEMENT	CENTRALAB PART No.	RETMA BASE TYPE	NOTES
V1	RF Amp.	6BC5	6BC5		7BD	
V2	Mixer Osc.	5J6	6J6		7BF	
V3	1st Video IF Amp.	6CB6	6CB6		7CM	
V4	2nd Video IF Amp.	6CB6	6CB6		7CM	
V5	3rd Video IF p. Amplifier-Video Detector	6AN8	6AN8		9DA	
V8	Video Output-Sync Sep	6AN8	6AN8		9DA	
V7	Sound IF Amp-Sync Amp.	6AN8	6AN8		9DA	
V9	Audio Det.	6BN6	6BN6		7DF	
V9	Audio Output	25B5	25B5		11Q	
V10	Vert Mult - Vert Output	12BH7	12BH7		9A	
V11	Horiz AFC - Horiz Osc.	12AU7	12AU7		9A	
V12	Horiz Output	25BQ6GT	25BQ6GT		8AM	
V13	Damper	25AX4GT	25AX4GT		4CG	
V14	HV Rectifier	1X2B	1X2B		8Y	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: AIRLINE PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.	RETMA BASE TYPE	NOTES
V15	17HP4	17HP4	17HP4	17HP4, 17RP4	17HP4	12L	1 Circuit changes necessary.
	21YP4	21YP4	21YP4	21YP4, 21YP4A	21YP4	12L	
				21AFP4 ①		12M	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1	150	150	8C-23464	AFH31-70		82P3-3	XA094		FP117	TVL-3442
C2	150	150	8C-23463	AFH31-70		XA094			FP117	TVL-3442
C3A	●100	300	8C-23689	AF33-26		C187			FP389.1	TVL-3574
B	±10	300		PR8450/30		BR505			TC89	TVA-1711
C	±25	450								
D	80	50								
C4	470	500	8P3-121	1468-471	D6-471	5W5T47	GP2K-471	MC245		1FM-35
C5	470	500	8P3-121	1468-471	D6-471	5W5T47	GP2K-471	MC245		1FM-35
C6	3-8		13A-079		826-10					
C7	500		13M102Z02		EF-001		MFT-1000			503C-D1
C8	.5-3		31A-056-1		829-3		31A5-01-CR5		C756SA	
C9	120		13LBD121K		BPD-00012		D6-121	G044	GP2K-121	UC-5312	5GA-T12
C10	120		13LBD121K		BPD-00012		D6-121	G044	GP2K-121	UC-5312	5GA-T12
C11	1000		12LSY102Z		BPD-001		DD-102	K089	801-001		51K-D1
C12	800		12M102Z02		EF-001		MFT-1000				503C-D1
C13	120		13LBD121K		BPD-00012		D6-121	G044	GP2K-121	UC-5312	5GA-T12
C14	.5-3		31A-056-1		829-3		31A5-01-CR5		C756SA	
C15	10		15LSC100A		S10N150		N10K-100	N018	NT-541		5TCU-Q1
C16	5		15LS1A050C		S5NP0		TC2-4.7	Z002	N90K-050		5TCCB-V47
C17	1000		12LSY102Z		BPD-001		DD-102	K089	801-001		51K-D1
C18	47		15LSC100A		S10N*P0		TC2-10	Z018	N90K-100		5TCC-Q1
C19	120		13LBD121K		BPD-00012		D6-121	G044	GP2K-121	UC-5312	5GA-T12
C20	800		13M102Z2		EF-001		MFT-1000				503C-D1
C21	800		13M102Z2		EF-001		MFT-1000				503C-D1
C22	1000		8G-13201		S1000		D6-102	T252	GP2L-102	UC-521	5HK-D1
C23	5000		8G-13962		BPD-005		DD-502	K060	811-005	DC-525	5HK-D5
C24	2000		8G-13522		S2000		D6-202	T256	GP2-333-202	UC-5321	5HK-D2
C25	1000		8G-13201		S1000		D6-102	T252	GP2L-102	UC-521	5HK-D1
C26	5000		8G-13963		BPD-005		DD-502	K060	811-005	DC-525	5HK-D5
C27	5		8G-12166		S5NP0		TC2-4.7	T207	N90K-050	DT-555	5TCCB-V47
C28	47		8G-11731		S47NP0		TC2-47	T222	N90K-470	DT-5447	5TCC-Q47
C29	1000		8G-13201		S1000		D6-102	T252	GP2L-102	UC-521	5HK-D1
C30	680		8G-21105		S1680		D6-681	T250	GP2K-681	UC-5368	5GA-T68
C31	1000		8G-13201		S1000		D6-102	T252	GP2L-102	UC-521	5HK-D1
C32	5000		8G-13963		BPD-005		DD-502	K060	811-005	DC-525	5HK-D5
C33	5000		8G-13962		BPD-005		DD-502	K060	811-005	DC-525	5HK-D5
C34	5000		8G-13963		BPD-005		DD-502	K060	811-005	DC-525	5HK-D5
C35	1000		8G-13201		S1000		D6-102	T252	GP2L-102	UC-521	5HK-D1
C36	5		8G-12166		S5NP0		TC2-4.7	T207	N90K-050	DT-555	5TCCB-V47
C37	5		8G-12166		S5NP0		TC2-4.7	T207	N90K-050	DT-555	5TCCB-V47
C38	.22	300	8K-23080		P288-22		CUB2P22		PT4022		2TM-P22
C39	.1	300	8K-23084		P288-1		DF-104		PT401		2TM-P1
C40	51		8G-23793		S15N750		TCN-51	TN15	N750L-510		PT401
C41	.1	400	8K-23095		P488-1		DF-104	CUB4P1		PT401	4TM-P1
C42	3.3		8L-23581		S13.3NP0		TCZ-3.3	TZ06	NP0K-3R3	DT-5533	5TCCB-V33
C43	33		8G-13503		S33NP0		TCZ-33	TZ18	NP0K-330	DT-5433	5TCC-Q33
C44	10000		8G-23089		BPD-01		DD-103	K082	811-01	DC-531	5HK-S1
C45	470	500	8P3-121		1469-471		5R5T47		MC8245		MS-35
C46	10000		8G-23089		BPD-01		DD-103	K082	811-01	DC-531	5HK-S1
C47	10000		8G-23089		BPD-01		DD-103	K082	811-01	DC-531	5HK-S1
C48	30		8G-12788		S1N0P0		TCZ-10	TZ09	NP0K-100	DT-5491	5TCC-Q1
C49	1000		8G-23201		S1000		D6-102	T252	GP2L-102	UC-521	5HK-D1
C50	.01	400	8G-23089		P488-01		D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1
C51	.01	400	8K-23091		P488-01		D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1
C52	.0039	600			P686-004		D6-402	CUB4D4	GP2-333-402	PT624	6TM-D4
C53	220		8G-19885		S1220		D6-221	TP39	GP2K-221	UC-5322	5GA-T22
C54	5000		8G-13963		BPD-005		DD-502	K060	811-005	DC-525	5HK-D5
C55	.047	200	8K-23083		P288-047		DF-503	CUB2S47		PT4147	2TM-S47
C56A	.002									PT623	6TM-D3
B	.005		●27A-22376		●PA-100		●1C-701	●1U5TM1	●1406-01	PT625	6TM-D5
C	.005									PT625	6TM-D5
C57	5000		8G-13522		S2000		D6-202	TP56	GP2-333-202	UC-533	5HK-D5
C58	.1	300	8K-23084		P288-1		DF-104	CUB2P1		PT401	2TM-P1
C59	.033	400	8K-23815		P488-033			PM6S33		PT4133	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C60	.1	200	8K-23084		P288-1		DP-104	CUB2P1		PT401	2TM-P1	
C61	.1	400	8K-23095		P488-1		DF-104	CUB4P1		PT401	4TM-P1	
C62	1000	2000	8G-23781		HVD30-001		DD30-402		3KV-102		30GA-D1	
C63	.022	400	8K-23093		P488-022		DF-203	CUB4S22	81T-03	PT4123	4TM-S23	
C64	.022	200	8K-23082		P288-022		DF-303	CUB4S22	81T-03	PT4123	4TM-S23	
C65	82	500	8P3-112		1469-820			22R5Q82				
C66	82	500	8P3-112		1469-820			22R5Q82				
C67	220	500	8P3-117		1469-221			22R5T22		MC8240		
C68	.047	200	8K-23083		P288-047		DF-503	CUB2S47		PT4147	2TM-S47	
C69	.022	200	8K-23083		P288-022		DF-503	CUB4S22	81T-02	PT4123	4TM-S22	
C70	.47	200	8K-23087		P288-47			CUB2P47		PT4047	2TM-P47	
C71	.047	400	8K-23094		P488-047		DF-503	CUB4S47		PT4147	4TM-S47	
C72	330	500	8P3-117		1469-331			5R5T33				
C73	.0068	600	8M-24087									
C74	4700		8J-23779		BPD-00047		D6-471	K080	801-471	UC-5347	5GA-T47	
C75	.001	600	8K-23099		P688-001		D6-102	CUB6D1	GP2L-102	PT521	5TM-D1	
C76	.047	400	8K-23094		P488-047		DF-503	CUB4S47		PT4147	4TM-S47	
C77A	5000		8G-23790		BPD-2X0047		DD2-502	DK079	81L-005	DC-525	5HK-2D47	
B	5000								81L-005	DC-525		
C78	.1	800	8K-23085		P688-1			CUB6P1		PT601	6TM-P1	
C79	.15	200	8K-23085		P288-15			CUB2P15		PT4015	2TM-P15	
C80	220	3000	8G-23983		HVD30-00022		DD30-221		3KV-221		30GA-T22	
C81	47	3000	8G-24028		HVD30-00047		DD30-470		3KV-470		30GA-Q47	Note 2
C82	47	2000	8G-23545		HVD20-00047		DD30-470		3KV-470	MCL-447	20GA-Q47	
C83	1000		8G-13962		BPD-005		DD-502	K080	81L-005	DC-525	5HK-D5	
C84	30		14B-23772									

Note 1. Some versions use .01MFD in this application (part #8K-23102).
Note 2. Not used in all versions.
● Items C56A, C56B, C56C, R56A, R56B, R56C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESIST-ANCE	WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	50KΩ	½	B-10B-23604	Q11-123	A47-50K-S	AB-31	U-35	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-5	Not Req.	Attach to R1A
R2A	500KΩ	½	B-10B-23695	Q11-133	A47-500K S	AB-50	U-50	Brightness
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A
R3A	100Ω	½	D40A-23714		RTV-495	F1-4	UP12L1	Contrast Point
B	1Meg	½			Not Req.	B2-52	UR6A	Volume-Rear
C	Switch				Not Req.	KB-1	UB-36	Attach to R3B
R4A	100Ω	½	B-10B-23693	Q11-128	A47-100K-S	AB-40	U-42	Vert. Hold
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R4A
R5A	600Ω	½	B-10B-23407	Q11-114	A47-600-S	AB-10	SU-14	Vert. Linearity - Note 1
	with 1000Ω stop.							
B	Shaft		Not Req.	HQ	FK3-1/4	AK-1	Not Req.	Attach to R5A
R6A	3Meg	½	B-10B-23696	Q11-140	A47-3Meg-S	AB-84	SU-59	Vert. size
B	Shaft		Not Req.	HQ	FK3-1/4	AK-1	Not Req.	Attach to R6A
R7A	250KΩ	½	B-10B 23656	Q11-130	A47-250K-S	AB-50	SU-46	Coarse Horiz. Hold
B	Shaft		Not Req.	HQ	FK3-1/4	AK-1	Not Req.	Attach to R7A
R8	750Ω	1	A-10D-23857		95-750			Burst Wire Wound

Note 1. Connect a 1000Ω resistor in series with the right hand terminal of the control and the lead connecting to the same terminal of the original control (control viewed from shaft end, terminals down).
† Universal replacement (Mallory exact duplicate part no. US-886).

RESISTORS

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R9	220KΩ	½	9B1-27	BTS-220K	
R10	220KΩ	½	9B1-27	BTS-220K	
R11	150Ω	½		BTS-15K	
R12	47KΩ	½		BTS-47K	
R13	2200Ω	½		BTS-2200	
R14	1000Ω	½		BTS-1000	
R15	4700Ω	½		BTS-4700	
R16	2200Ω	½		BTS-2200	
R17	15KΩ	½		BTS-15K	
R18	10KΩ	½		BTS-10K	
R19	15KΩ	½		BTS-15K	
R20	12KΩ	½	9B1-75	BTS-12K	
R21	1000Ω	½	9B1-83	BTS-1000	
R22	47Ω	½	9B1-46	BTS-47	
R23	1000Ω	½	9B1-83	BTS-1000	
R24	18KΩ	½	9B1-77	BTS-18K	
R25	1000Ω	½	9B1-83	BTS-1000	
R26	820 5%	½	9B1-130	BTS-S1 5%	
R27	1000Ω	½	9B1-83	BTS-1000	
R28	82Ω	½	9B1-49	BTS-82	
R29	33KΩ	½	9B1-80	BTS-33K	
R30	1000Ω	½	9B1-83	BTS-1000	
R31	1Meg	½	9B1-88	BTS-1Meg	
R32	4700Ω	2	9B1-98	BTS-4700	
R33	1Meg	½	9B1-88	BTS-1Meg	
R34	47Ω	½	9B1-46	BTS-47	
R35	5600Ω	2	9B4-71		
R36	100KΩ	½	9B1-86	BTS-100K	
R37	22KΩ	½	9B1-78	BTS-22K	
R38	1000Ω	½	9B1-83	BTS-1000	
R39	100KΩ	3	9B1-86	BTS-300K	
R40	33KΩ	1	9B2-80	BTA-33K	
R41	18KΩ	2	9B4-77	BTS-18K	
R42	680Ω	½	9B1-50	BTS-680	
R43	220KΩ	½	9B1-90	BTS-220K	
R44	330KΩ	½	9B1-93	BTS-330K	
R45	150Ω	1	9B2-52	BTA-150	
R46	470KΩ	½	9B4-89	BTS-470K	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R47	10KΩ	½	9B1-74	BTS-10K	
R48	470KΩ	½	9B1-94	BTS-470K	
R49	2.2Meg	½	9B1-102	BTS-2 2Meg	
R50	22KΩ	2		BTH-22K	
R51	1Meg	½	9B1-98	BTS-1Meg	
R52	560KΩ	½	9B1-95	BTS-560K	
R53	100KΩ	½	9B1-86	BTS-100K	
R54	470KΩ	½	9B1-94	BTA-470K	
R55	100Ω	½	9B1-62	BTS-1000	
R56A	22KΩ	½		BTS-22K	
B	8200Ω	½	●17A-22376	BTS-8200	
C	8200Ω	½		BTS-8200	
R57	47KΩ	½		BTS-47K	
R58	82KΩ	½	9B1-85	BTS-82K	
R59	470Ω	1	9B1-70	BTA-470	
R60	2.5Meg	½	9B1-103	BTS-2.5Meg	
R61	100KΩ	½	9B1-86	BTS-100K	
R62	3.3Meg	½	9B1-102	BTS-3.3Meg	Note 4
R63	2300Ω	5	9C13-3105		
R64	100KΩ	½	9B1-86	BTS-100K	
R65	150KΩ	½	9B1-88	BTS-150K	
R66	82KΩ	½	9B1-85	BTS-82K	
R67	620KΩ	½	9B1-97	BTS-620K	
R68	330KΩ	½	9B1-93	BTS-330K	
R69	3900Ω	½	9B1-69	BTS-3900	
R70	1000Ω	½	9B1-98	BTS-1000	
R71	30KΩ	1		BTS-30K	Note 1
R72	150KΩ	½		BTA-150K	
R73	8200Ω	½	9B1-73	BTS-8200	
R74	47KΩ	2	9B1-82	BTH-47K	
R75	470KΩ	½	9B1-94	BTS-470K	
R76	100Ω	½	9B1-50	BTS-100	
R77	8200Ω	2	9B4-73	BTH-8200	
R78	1.5Ω	1	9C1-1085		
R79	10000Ω	10		PW10-1000	Note 2
R80	1500Ω	10		PW10-1500	Note 3
R81	2700Ω	½	9C11-1104		
R82	220KΩ	½	9B1-37	BTS-220K	

RESISTORS (cont)

ITEM No	RATING: OHMS	WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R83	90Ω	5	46M 23016		
R87	47Ω	15	DC-23672		
R85	560Ω	½	9B1-59	BTS-560	

ITEM No.	RATING: OHMS	WATT	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	NOTES
R86	560Ω	½	9B1-59	BTS-560	
R87	47Ω	½			Note 2

● Items R56A, R56B, R56C, C56A, C56B and C56C are combined in one unit.
Note 1. Some models may use a 33KΩ resistor in this application.
Note 2. Not used in all versions
Note 3.Some versions may use a 2500Ω resistor in this application.
Note 4. Some versions may use a 2.2meg resistor in this application.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	SEC 1	SEC 2	REPLACEMENT DATA: AIRLINE PART No.	Stancor PART No	Merit PART No	Triad PART No	RCA TYPE No.	Halldorson PART No	Thordarson PART No
T1	117VAC	12.6VCT		12D23699	P-8130					
	①.29A	②.2.4A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA: AIRLINE PART No	Halldorson PART No	Merit PART No	RCA PART No	Rom TYPE No	Stancor PART No	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	12E-23939							
T3	Vert. Output Trans.	12E-23726	21804	A-3037	222TI		V31A	A-8123	26652	A-102X
T4A	Yoke-Horiz. (9MH)	201-23744 ①	DF601 ② ③	MDF-70 ② ③	206DI ② ③		Y-70F08 ② ③	DY-8A ② ③	Y-5 ② ③	Y-12 ② ③
B	Vert. (43MH)									

① Includes deflection yoke part no. 13M-23755, C82, R85 and R86.
② Use original yoke cover and positioning device.
③ Use original horizontal yoke network.

TRANSFORMER (AUDIO OUTPUT)

ITEM No	IMPEDANCE: PRI.	SEC	REPLACEMENT DATA: AIRLINE PART No	Stancor PART No	Merit PART No	Triad PART No	Halldorson PART No	Thordarson PART No	NOTES
T5	6.4KΩ	3.5Ω	12C-23704	A-3878 ①	A-3026	S-7X ①	21113 ①	22S46	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: AIRLINE PART No.	VIKING PART No	QUAM PART No	NOTES
SP1	4"	PM	3.5Ω	18A23735 ①	426	4A07	① Used in models BR-4000A
	4"	PM	3.5Ω	18A24283 ②	426	4A07	② 2 speakers used in model BR-4005A
	5"	PM	3.5Ω	18A21215 ③	526	5A1	③ Used in model BR-4001A
	6"	PM	3.5Ω	18A34140 ④	626	6A1	④ 2 speakers used in model BR-4003A

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	SEC.	REPLACEMENT DATA: AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1A	Ant. Coil	0Ω CT	0Ω	31M-012-2H				Channel 2
B	Ant. Coil	0Ω CT	0Ω	31M-012-3H				Channel 3
C	Ant. Coil	0Ω CT	0Ω	31M-012-4H				Channel 4
D	Ant. Coil	0Ω CT	0Ω	31M-012-5H				Channel 5
E	Ant. Coil	0Ω CT	0Ω	31M-012-6H				Channel 6
F	Ant. Coil	0Ω CT	0Ω	31M-012-7H				Channel 7
G	Ant. Coil	0Ω CT	0Ω	31M-012-8H				Channel 8
H	Ant. Coil	0Ω CT	0Ω	31M-012-9H				Channel 9
I	Ant. Coil	0Ω CT	0Ω	31M-012-10H				Channel 10
J	Ant. Coil	0Ω CT	0Ω	31M-012-11H				Channel 11
K	Ant. Coil	0Ω CT	0Ω	31M-012-12H				Channel 12
L	Ant. Coil	0Ω CT	0Ω	31M-012-13H				Channel 13
L2	Fil. Choke	0Ω		34A-546				
L3A	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-2H				Channel 2
B	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-3H				Channel 3
C	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-4H				Channel 4
D	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-5H				Channel 5
E	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-6H				Channel 6
F	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-7H				Channel 7
G	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-8H				Channel 8
H	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-9H				Channel 9
I	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-10H				Channel 10
J	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-11H				Channel 11
K	RF, Mixer Grid, Osc. Coil	0Ω		31M-122-12H				Channel 12

(CONT'D ON NEXT PAGE)

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIRLINE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L	RF, Mixer Grid, Osc. Coil	0Ω		31M-112-13H				Channel 13
L4	Fil. Choke	0Ω		34A-575				
L5	RF Choke	0Ω		31B-638-1				
L6	1st. Video IF	.9Ω		31B-257-8				
L7	2nd. Video IF	.1Ω		201-23829	17-1004 *	TV-103 ■	6189 ■	
L8	RF Choke	1.8Ω		16A-18676				2.2 Microhenries, IRC part #CLA
L9	3rd. Video IF			201-24043				Includes 27KΩ resistor, 510Ω resistor, 47MMF and 470MMF Cap.
L10	Shunt Peaking Coil	2.3Ω		201-20265	19-3036	TV-180	6176	38 Microhenries
L11	4th. Video IF	.2Ω	.2Ω	13B-23887	17-4524			
L12	Series Peaking Coil	3.4Ω		16A-22923	19-6022		6152	25 Microhenries
L13	Series Peaking Coil	3.4Ω		16A-22923	19-6022		6152	25 Microhenries
L14	Shunt Peaking Coil	23Ω		16A-19365	19-3500	TV-188	4648	470 Microhenries
L15	4.5MC Trap	1.8Ω	2.9Ω	201-23729				Includes a 51MMF, 3.3MMF and 33MMF Caps.
L16	Series Peaking Coil	8Ω		16A-21391	19-3300		6155	305 Microhenries
L17	Series Peaking Coil	7Ω		16A-20970	19-3250	TV-185	6181	270 Microhenries
L18	Series Peaking Coil	2.6Ω		16A-24090	19-1005		4612	11 Microhenries
L19	Sound IF	.3Ω	.3Ω	201-23873				
L20	Quadrature Coil	5.4Ω		201-23727	17-3400		1469	
L21	Ringing Coil	43Ω		13M-24085	19-1575 ▲		6314	
L22	Horiz. Osc.	63Ω		13M-24086				tapped @ 13Ω
L23	RF Choke	1.4Ω		16A-21701	19-1005		4612	8 Microhenries

* Parallel with 5MMF Capacitor.
■ Parallel with 5MMF capacitor and enlarge mounting hole.
▲ Change capacitor across coil to .01MFD.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA AIRLINE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L24	.220A	37.4Ω	.5 Hy.	16A-23889					

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA AIRLINE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.250A	21J23840	1236A	RS300	6S300	6Q4	300	
M2	.250A	21J23840	1236A	RS300	6S300	6Q4	300	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Tuner	211-23684	VHF
M4	Centering device	16M-23770	Includes yoke cover
M5	Ion trap	16M-19705	17" Picture Tube
	Ion trap	16M-19706	21" Picture Tube
B2	Trimmer Cap.	8E-18511	Horiz. Drive - (80-480MMF)
	Cabinet	200-23920-10	Model BR-4000A (Brown alligator)
	Cabinet	200-24147	Model BR-4005A (Brown hammerloid)
	Cabinet	200-23921-9	Model BR-4001A (Brown hammerloid)
	Cabinet	200-24154-1	Model BR-4003A (Gray leatherette)
	Cabinet	200-24154-2	Model BR-4003A (Brown leatherette)
	Knob	5G-23788-A93	Channel Selector
	Knob	5B-23789-A93	Fine Tuning
	Knob	5B-23787-A93	Contrast
	Knob	5B-23786-A93	On/Off Volume
	Knob	5B-23805-A93	Control (3 used)
	Disk	5M-23792-A93	Channel Indicator Disk
	Disk	5M-23794-A93	Control Indicator Disk
	Safety Glass	30M-18773	17" Picture Tube
	Safety Glass	30M-23709	21" Picture Tube

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V11, V12, V13 and V14. Check waveform W11.

If Satisfactory	If Unsatisfactory
Check T2, T4A, C80, C79, C81, C78, C76, R77 and other associated components.	Check L21, L22, C73, C72, R71, R73, R74 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V12, V13 and V14. Check M1 and M2. Check C75, C74, R77 and other associated components.

BLOOMING

Check by substitution V12, V13 and V14. Check M1 and M2. Check R78, C78, C80, C75 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5 and V6. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge, and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENT

Touch-up adjustment of the VHF tuner oscillator circuit may be accomplished by removal of Channel Selector and fine tuning knobs. Remove 2 screws from escutcheon ring, remove ring . The adjustments are accessible one at a time through the small hole in the cabinet to the right of the channel selector shaft. Also, the vertical size and vertical linearity adjustments are accessible when the escutcheon ring is removed.

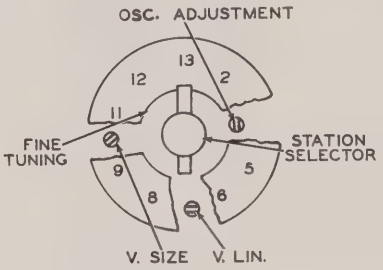
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove chassis. Remove 4 bolts from supporting brackets. Remove safety glass and frame.

PICTURE TUBE REMOVAL

For picture tube removal, remove chassis, safety glass and frame, tube socket, ion trap, H. V. lead. Remove picture tube.

SERVICE ADJUSTMENT LOCATION (ALSO SEE TUBE PLACEMENT CHART ON PAGE 5)



HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horiz. Oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on rear of chassis.Set the Horiz. Hold Control at the center of its range and adjust the coarse Horiz. Hold Control until picture synchronizes horizontally. (For location see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

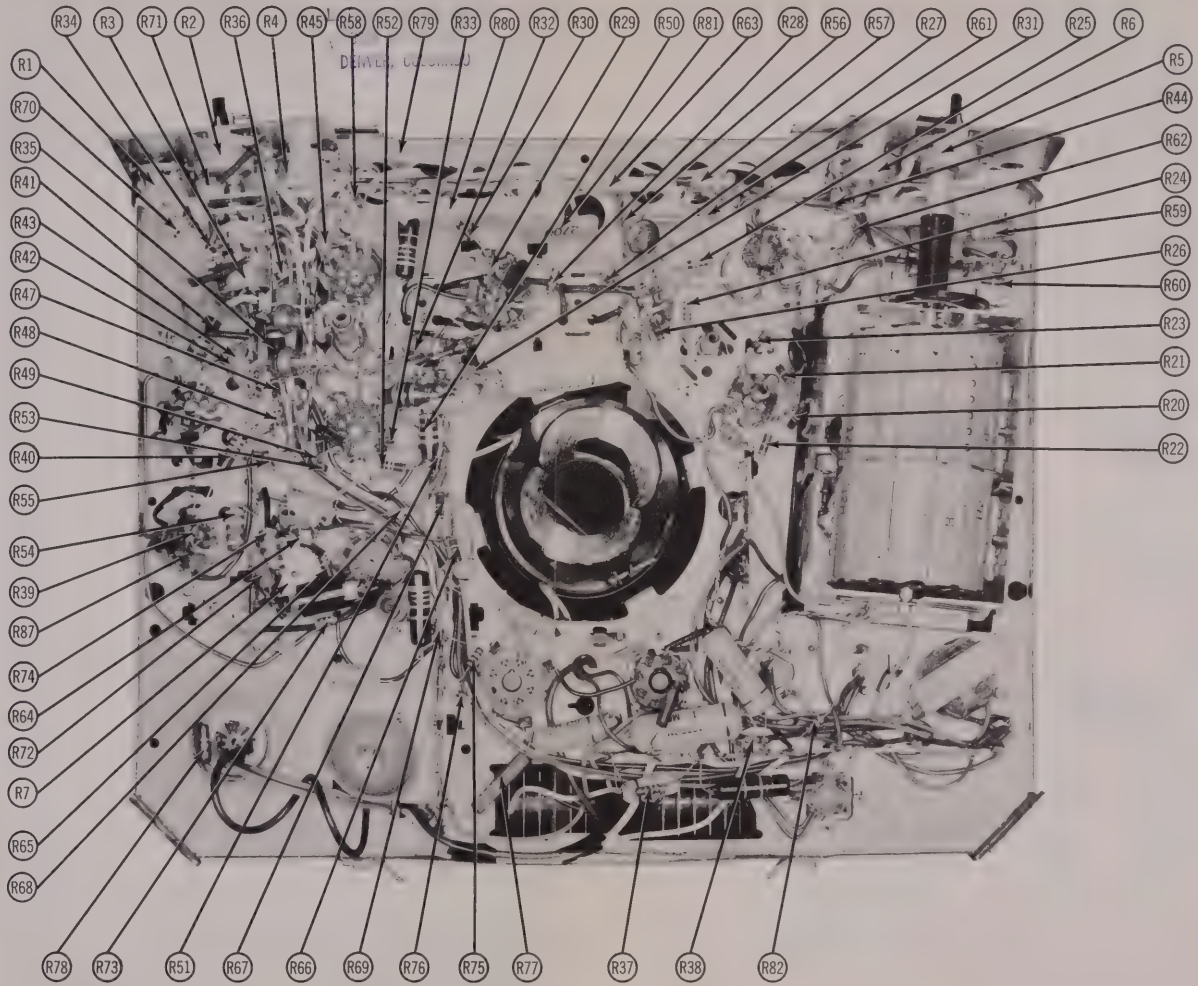
To eliminate sound IF detector buzz, adjust the buzz control located on rear of the chassis for maximum volume and minimum buzz. If results are unsatisfactory, see align instructions on pages 6 and 7.

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push-on type control knobs from top of cabinet.
2. Remove 5 metal screws from under side of cabinet.
3. Remove 4 metal screws. Remove rear cover.
4. Disconnect speaker leads
5. Remove 5 metal screws located on the sides and top of safety glass frame.
   Remove 2 metal screws located under top control knobs.
6. Slide picture tube and chassis from front of cabinet.



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

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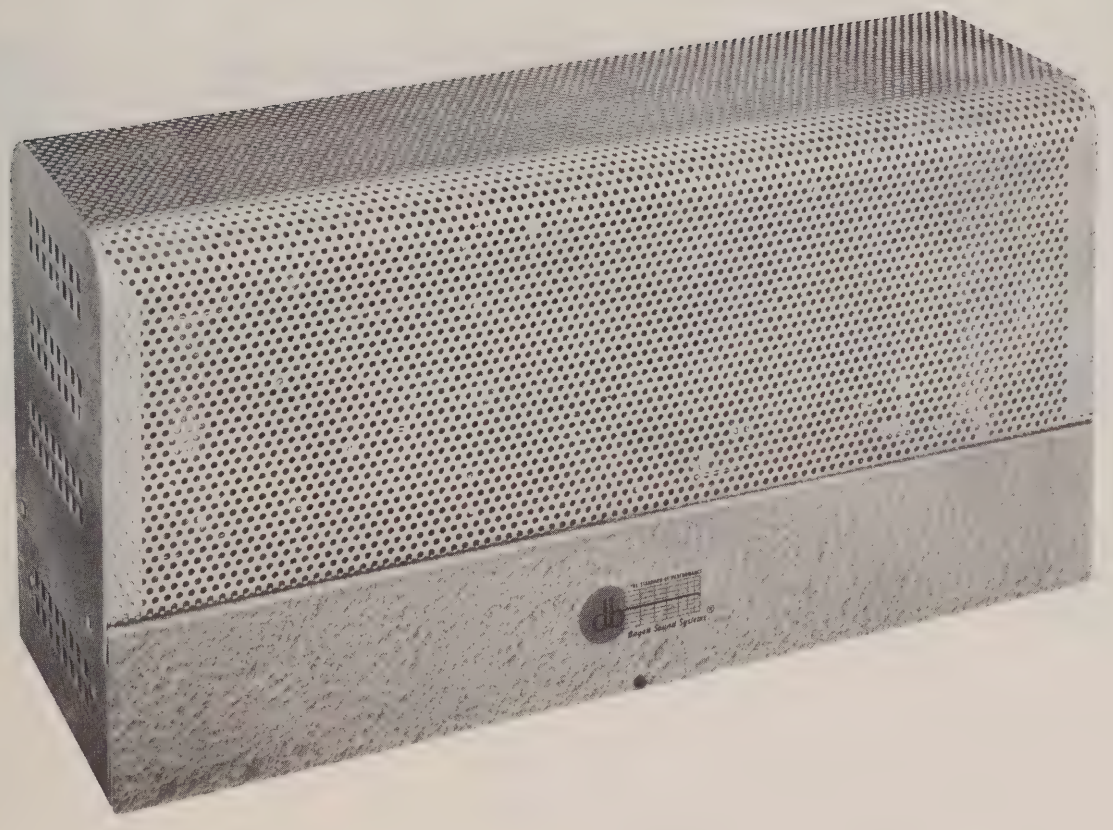
30
DENVER

DAVID BOGEN
MODEL DO30A



DAVID BOGEN
MODEL DO30A

TRADE NAME	David Bogen Model DO30A
MANUFACTURER	David Bogen Co., Inc., 29 Ninth Ave., New York 14, N. Y.
TYPE SET	AC Operated 30 Watt Audio Amplifier
TUBES (Five)	Types 12AT7 AF Amp.-Phase Inv., 12AU7 Driver, (2) KT66 Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING 1.22 Amp. @ 117 Volts AC

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PARTS LIST AND DESCRIPTIONS

DAVID BOGEN
MODEL DO30A

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		David Bogen PART No.	STANDARD REPLACEMENT		
V1	AF Amp. - Phase Inverter	12AT7	12AT7	9A	
V2	Driver	12AU7	12AU7	9A	
V3	Output	KT66	KT66	7S	
V4	Output	KT66	KT66	7S	
V5	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	David Bogen PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	16	600		GL600-16		KR616C		HS696	AP-16	
C2A	▲30	500		AFH3-52		C039			R-1647	
B	■20	500								
C	▲20	500								
C3	50	100		PRS150/50		BR5015		TC49	TVA-1414	
C4	50	100		PRS150/50		BR5015		TC49	TVA-1414	
C5	4	15		PRS150/4		BR550		TC30	TVA-1203	
C6	330	500		1468-331		5R5T33				
C7	.22	400		P488-22		CUB4P22		PT4022	4TM-P22	
C8	.22	400		P488-22		CUB4P22		PT4022	4TM-P22	
C9	.22	400		P488-22		CUB4P22		PT4022	4TM-P22	
C10	.22	400		P488-22		CUB4P22		PT4022	4TM-P22	
C11	22			SI22	D6-220		GP1K-220	UC-5422	5GA-Q22	
C12	22			SI22	D6-220		GP1K-220	UC-5422	5GA-Q22	
C13	50	500		1468-501		5R5T5		MCE245	1FM335	

CONTROLS

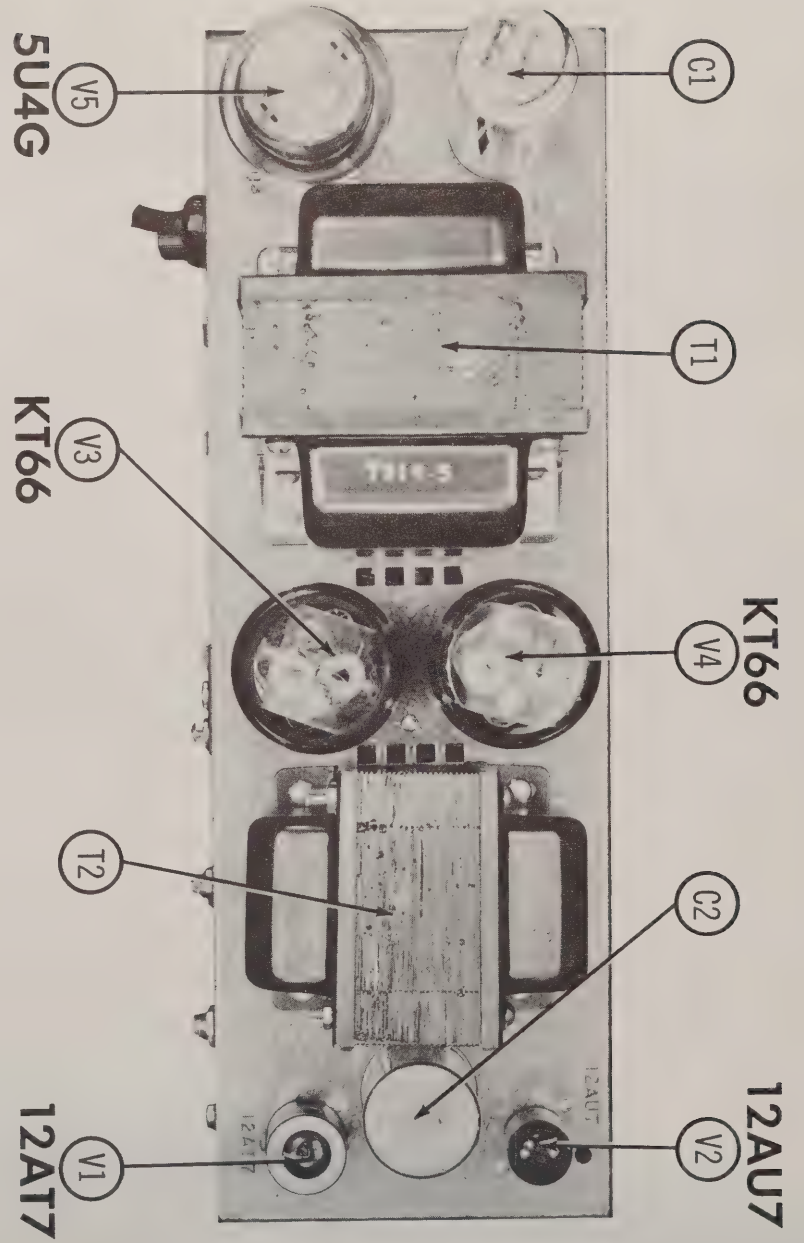
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	David Bogen PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	V275-A	Q13-133	A47-500K-Z	AB-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R1A
R2A	25Ω	2	V351	W25	A43-25	VK-111	R25L	Damping Factor
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R2A
C	Switch		Not Req.	76-2	SWE-20	K-12	US-27	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R3	22KΩ	½		BTS-22K	
R4	4700Ω	½		BTS-4700	
R5	220Ω	½		BTS-220	
R6	470KΩ	½		BTS-470K	
R7	68KΩ	½		BTS-68K	
R8	33KΩ	½		BTS-33K	
R9	68KΩ	½		BTS-68K	
R10	68KΩ	½		BTS-68K	
R11	68KΩ	½		BTS-68K	
R12	1Meg	½		BTS-1Meg	
R13	2700Ω	½		BTS-2700	
R14	2200Ω	½		BTS-2200	
R15	100KΩ	½		BTS-100K	
R16	1Meg	½		BTS-1Meg	
R17	100KΩ	½		BTS-100K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	David Bogen PART No.	IRC PART No.	
R18	22KΩ 5%	½		BTS-22K 5%	
R19	330KΩ	½		BTS-330K	
R20	850Ω	7		2D-850	
R21	22KΩ 5%	½		BTS-22K 5%	
R22	330KΩ	½		BTS-330K	
R23	850Ω	7		2D-850	
R24	33KΩ	½		BTS-33K	
R25	100KΩ	½		BTS-100K	
R26	15KΩ	2		BTB-15K	
R27A	20KΩ	50	R23326		
B	3000Ω	50			
R28	2000Ω	7		1 3/4A-2000	
R29	250Ω	15			
R30	.47Ω	2			
R31	.27Ω	1			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ 1.22A	1080VCT .120ADC	5VAC @ 3A	6.3VCT @ 3.3A	T-319-5					

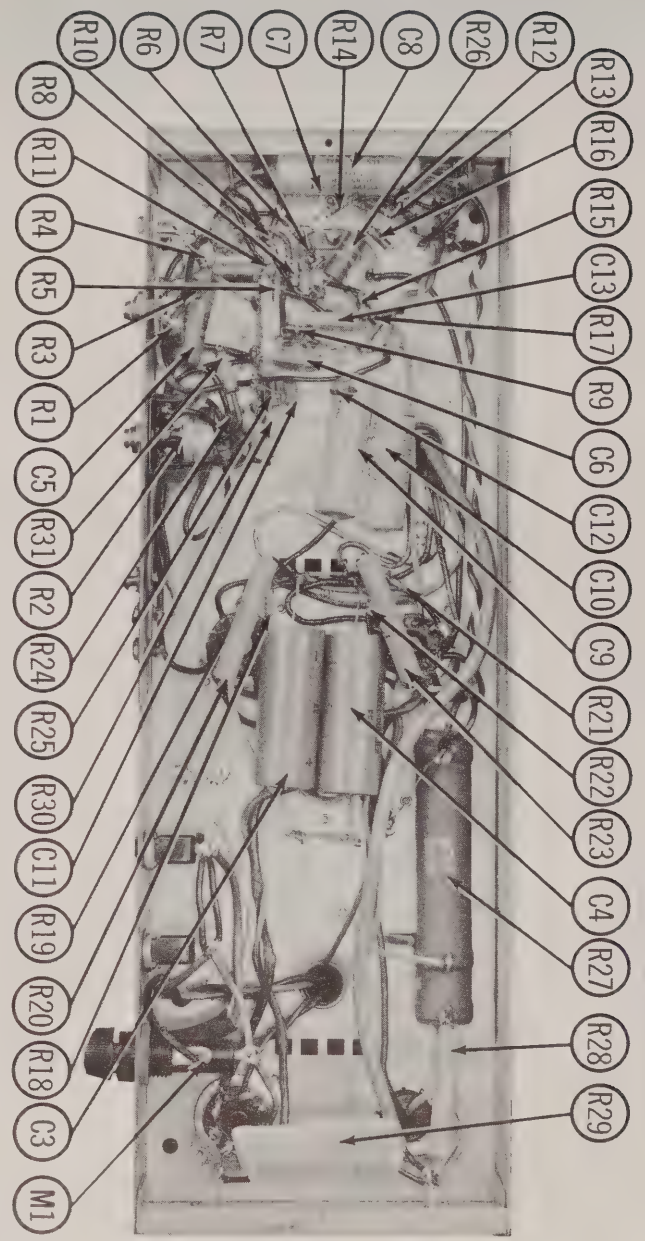
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	David Bogen PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	5.2KΩ PRI#2 5L.4Ω Res.	16Ω tap @ 8Ω	T-2111						

FUSES

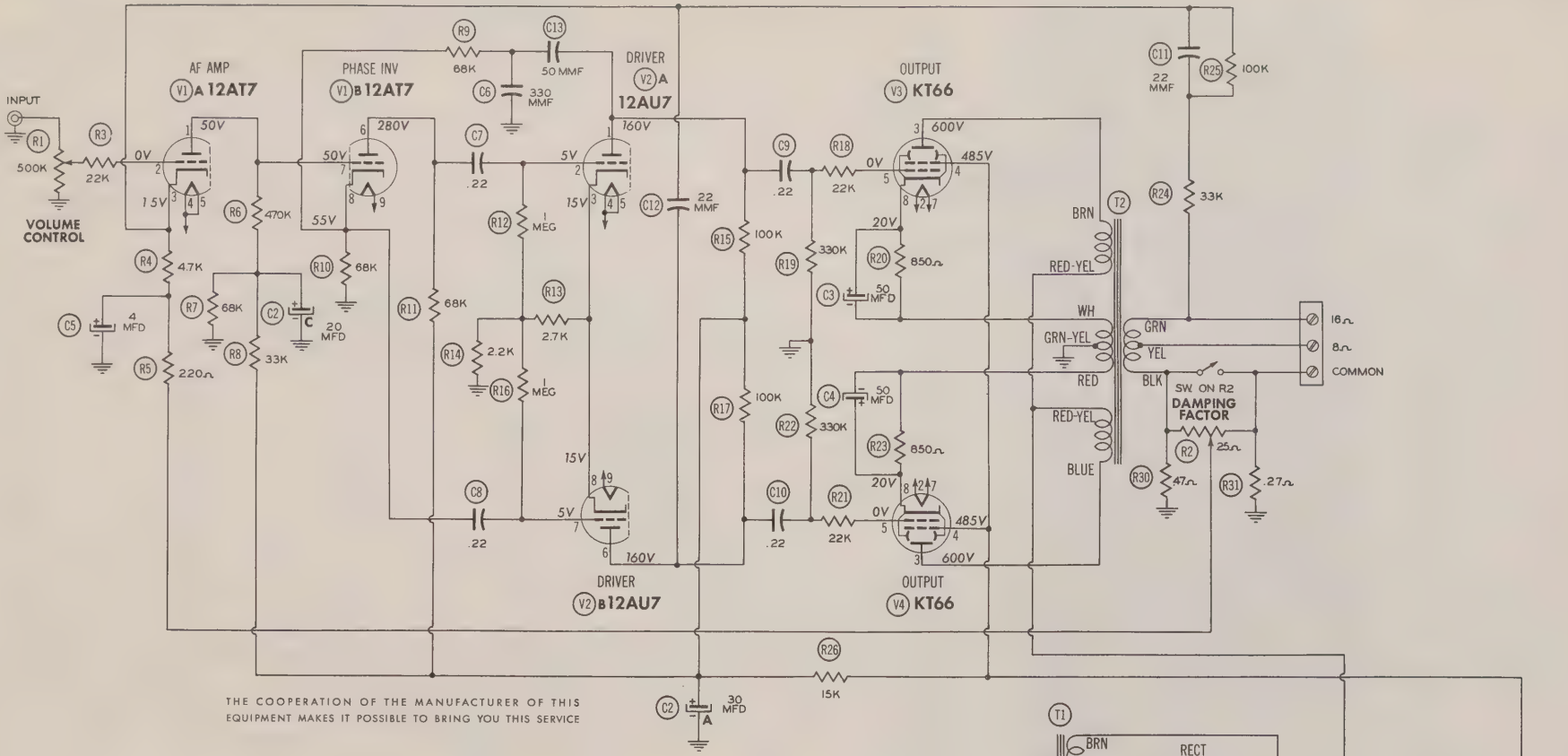
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			David Bogen PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A 125V			313002 (3AG S/B 2A)	342001	MDL2	HKP

CHASSIS—BOTTOM VIEW



DAVID BOGEN MODEL DO30A

DAVID BOGEN MODEL DO30A



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	500KΩ	22KΩ	5KΩ	.1Ω	.1Ω	†100KΩ	500KΩ	68KΩ	.1Ω
V 2	12AU7	†135KΩ	1Meg	5KΩ	.1Ω	.1Ω	†135KΩ	1Meg	5KΩ	.1Ω
V 3	KT66	0Ω	.1Ω	†520Ω	†3.7KΩ	350KΩ	0Ω	.1Ω	†850Ω	
V 4	KT66	0Ω	.1Ω	†520Ω	†3.7KΩ	350KΩ	0Ω	.1Ω	†850Ω	
V 5	5U4G	INF	18KΩ	INF	55Ω	INF	48Ω	INF	18KΩ	

† MEASURED FROM PIN 8 OF V5.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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DENVER, COLORADO

CHASSIS RA-301-A1

DUMONT CHASSIS
RA-301, RA-301-A1, RA-302

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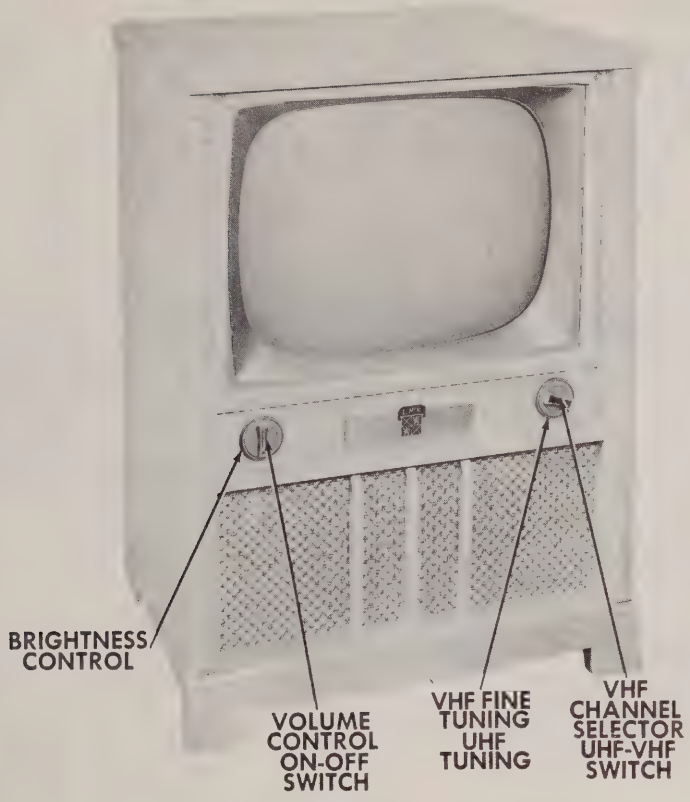

DUMONT CHASSIS
RA-301, RA-301-A1, RA-302

DUMONT CHASSIS RA-301-A1

TRADE NAME	Dumont Chassis RA-301, RA-301-A1, RA-302
MANUFACTURER	Allen B. Dumont Laboratories, Inc., 257 Sixteenth Ave., Patterson, N. J.
TYPE SET	Television Receiver
TUBES	Twenty-Five
POWER SUPPLY	110-120 Volts AC - 60 Cycles RATING 2.3 Amp. @ 117 Volts AC
TUNING RANGE—	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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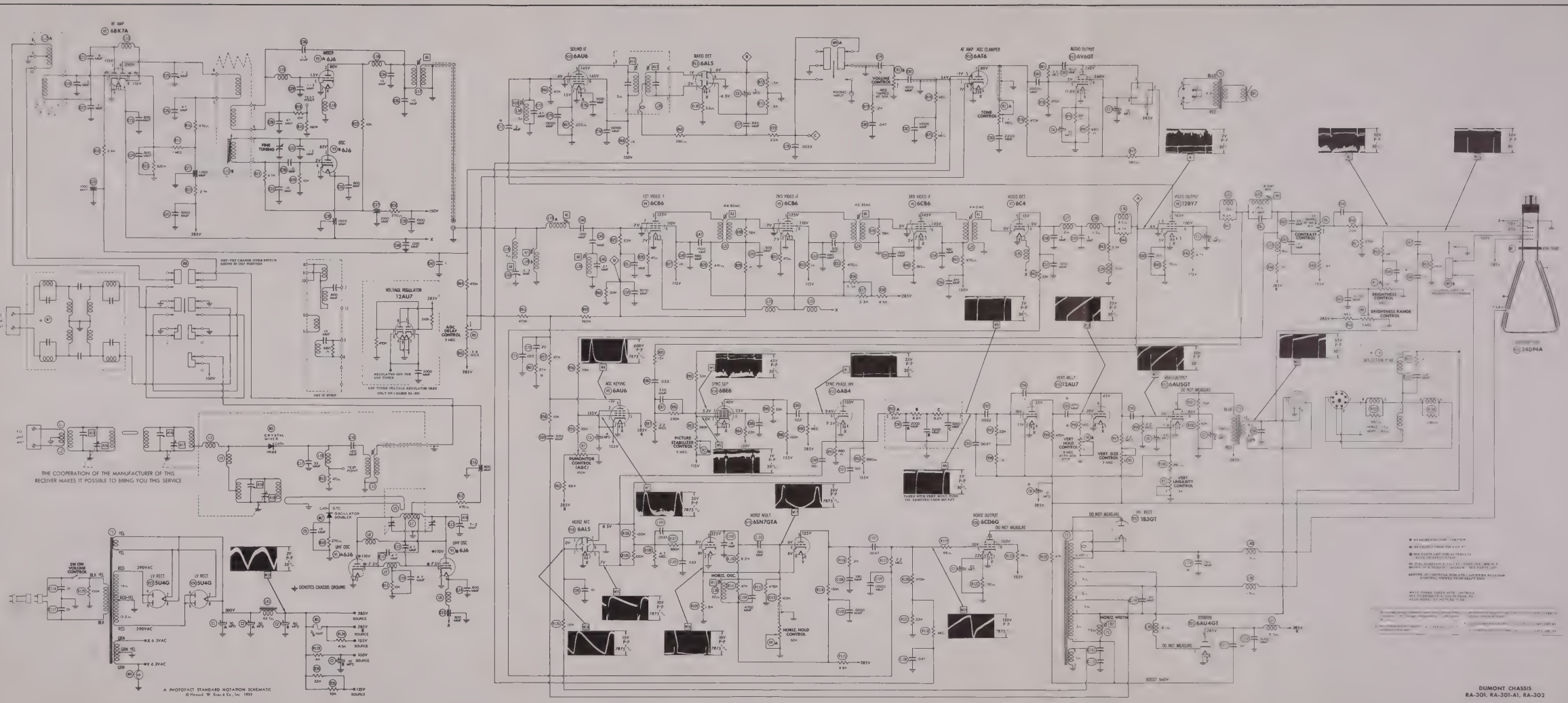
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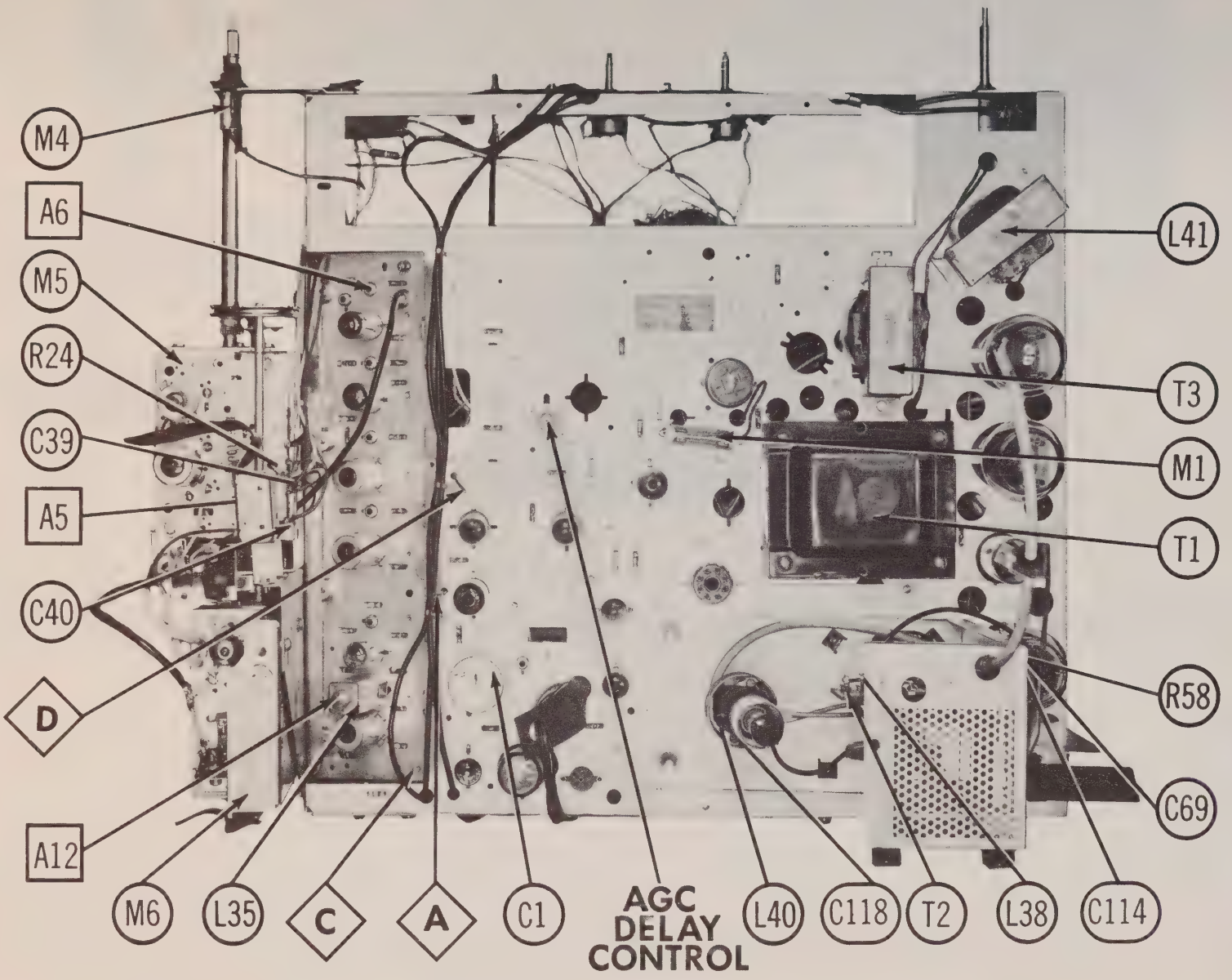
DUMONT CHASSIS RA-301, RA-301-A1, RA-302
DUMONT
CHASSIS RA-301, RA-301-A1, RA-302



CHASSIS TOP VIEW

DUMONT
CHASSIS RA-301, RA-301-A1, RA-302

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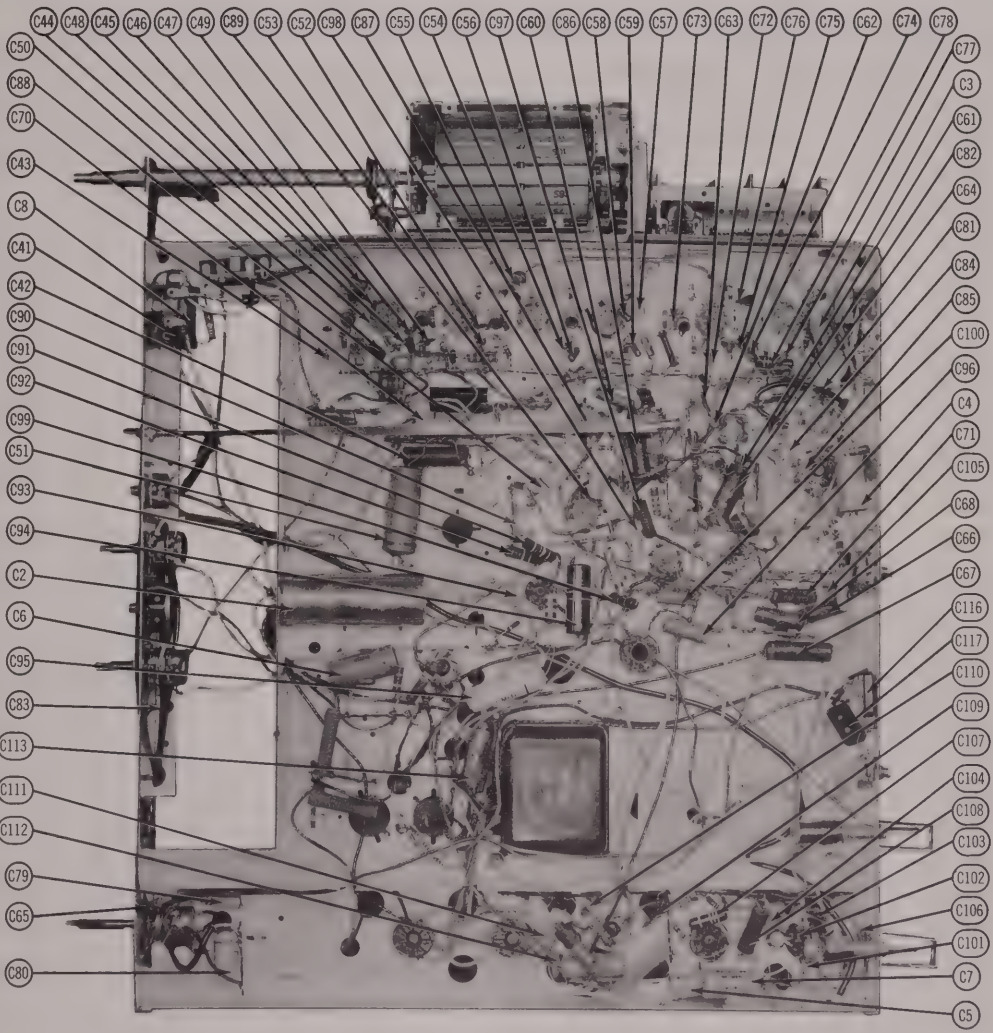
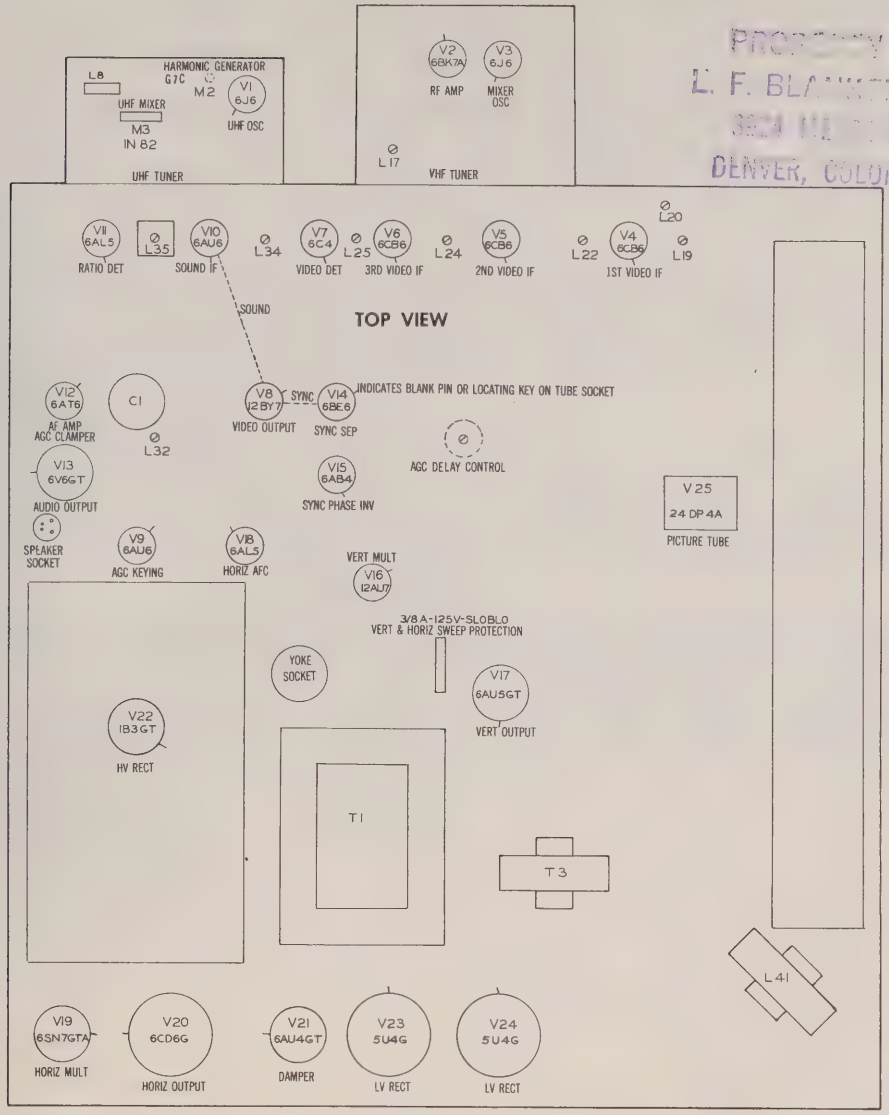


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

CHASSIS RA-301, RA-301-A1, RA-302

DUMONT

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V23, V24**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6, V7, V8 (V1 UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V8, V9, V25**
Has pic, no sound - **V10, V11, V12, V13**
Overloaded picture - **V9, V12**

SYNC FAILURE
No vert. sync - **V15, V16**
No horiz. sync - **V15, V18, V19**
No vert. or horiz. sync - **V14, V15**

SWEEP FAILURE
No raster, has sound - **V19, V20, V21, V22, V25, Fuse (M1)**
No vertical deflection - **V16, V17**
Poor vert. linearity or foldover - **V16, V17**
Poor horiz. linearity or foldover - **V19, V20, V21**
Narrow picture - **V19, V20, V21, V22, V23, V24**
Vert. off freq. - **V15, V16**
Horiz. off freq. - **V15, V18, V19**

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing V20 and V21 from their sockets.

VIDEO IF ALIGNMENT

Place the channel selector switch between any two channels. This will disable the local oscillator and then reduce the possibility of erroneous indications. Wrap one end of a short length of wire around pin 5 of 6J6 converter tube (V3).
Connect the high side of the signal generator to the free end.
Attenuate signal generator output to maintain not more than 2 volts on VTVM.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to pin 5 (grid) of V3. Low side to chassis.	Not used	44.0MC	Any Unused Channel	Use VTVM. DC probe to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	"	42.35MC	"	"	A2	"
3.	"	"	"	44.85MC	"	"	A3	"
4.	"	"	43.5MC (10MC Swp)	41.25MC 42.25MC 45.75MC 47.25MC	"	Vert. Amp. thru detector (Fig.1) to pin 5 (plate) of V4. Low side to chassis.	A4, A5, A6, A7, A8	Adjust for response curve similar to Fig.2. Adjust A4 for MINIMUM marker amplitude at 41.25MC. Adjust A5 and A6 to place the 45.75 markers at 70% on response curve. Adjust A7 to place 42.25MC marker at 55% on response curve. Adjust A8 for MINIMUM marker amplitude at 47.25MC. Remove short length of wire attached to pin 5 of V5.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to point (A). Low side to chassis.	Not used	4.5MC (400∿Mod)	Any	Vert. Amp. thru detector (Fig.1) to pin 11 (cathode) of picture tube. Low side to chassis.	A9	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ moculation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to point (A). Low side to chassis.	4.5MC (450KC Swp)	4.5MC	Any	Vert. Amp. to point (B). Low side to chassis.	A10, A11	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig.3.
7.	"	"	"	"	"	Vert. Amp. to point (C). Low side to chassis.	A12	Reconnect C3. Adjust so that 4.5MC occurs at center of crossover lines as in Fig.4. SLIGHTLY retouch A-11 for maximum amplitude and straightness of crossover lines.

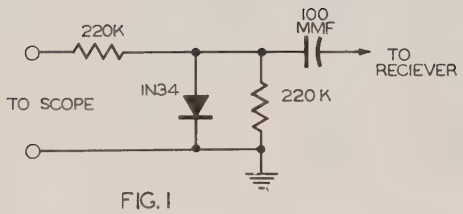

FIG. 1

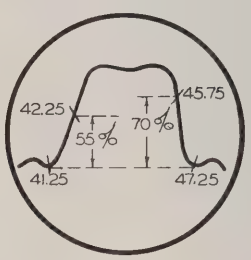

FIG. 2

ALIGNMENT INSTRUCTIONS (cont)

SOUND IF ALIGNMENT USING TV SIGNAL AND VTVM

Disconnect test equipment and replace V20 and V21 in their socket.
Connect antenna to VHF antenna terminal. Tune in a TV station and adjust for best picture.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6	Not used	Not used. Tune in a TV signal with audio	Not used	Strongest signal available	DC probe to point Ⓐ. Common to chassis.	A10, A11	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A12	Adjust for zero reading. A negative and positive reading will be obtained on either side of the correct setting.

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3924 MEADE ST.
DENVER, COLORADO

OSCILLATOR ALIGNMENT

Place the flat surface of the fine tuning control shaft downward.
The channel oscillator adjustment screws are reached thru a hole just to the right and slightly above the channel switch shaft.
The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Tune in all available stations in your area and adjust the proper oscillator slug for clearest picture and best sound.

RF AND MIXER ALIGNMENT

This portion of the receiver has been aligned at the factory and is very stable alignment of this portion of the receiver should not be required in the field.

UHF TUNER ALIGNMENT

Connect the negative side of 7.5 volt battery to point Ⓓ. Connect positive side to chassis.
Shunt the bias supply by a potentiometer, so bias may be varied.
Remove UHF tuner bottom cover and tune for UHF station.
Do not attempt to adjust the tuner plates in the oscillator section.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.		Not used	Not used	One available between 66 & 76	DC probe of one VTVM to point Ⓐ. Common to chassis. DC probe of another VTVM to point Ⓑ. Common to chassis.	A13 A14 A15	Adjust A13, A14 and A15 for maximum deflection. Adjustment will be obtained by bending the tabs in or out from the tuned lines. Adjust for slightly higher video output reading.
9.		Not used	"	One available between 20 & 24	"	A16 A17 A18	Adjust AGC bias for best picture. Adjust A16, A17 and A18 for maximum deflection on both meters. Adjust for slightly higher video output reading.
10.		"	"	14	Not used	A19	If channel 14 does not respond on a good signal, adjust A19 for best sound and picture.

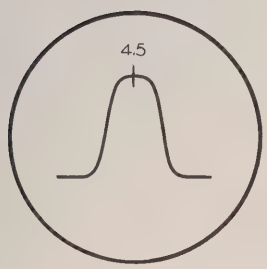


FIG. 3

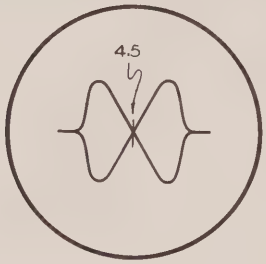
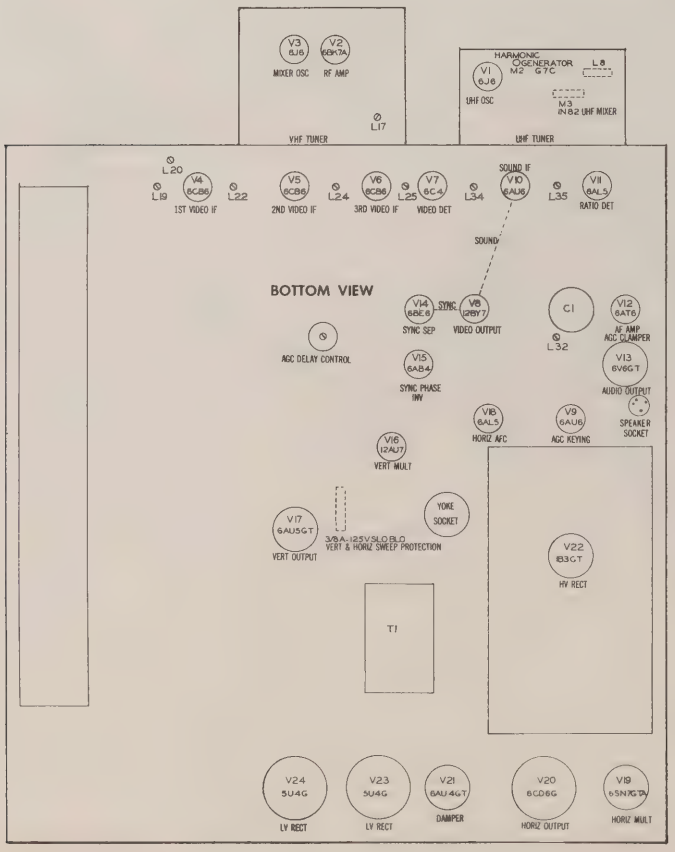


FIG. 4

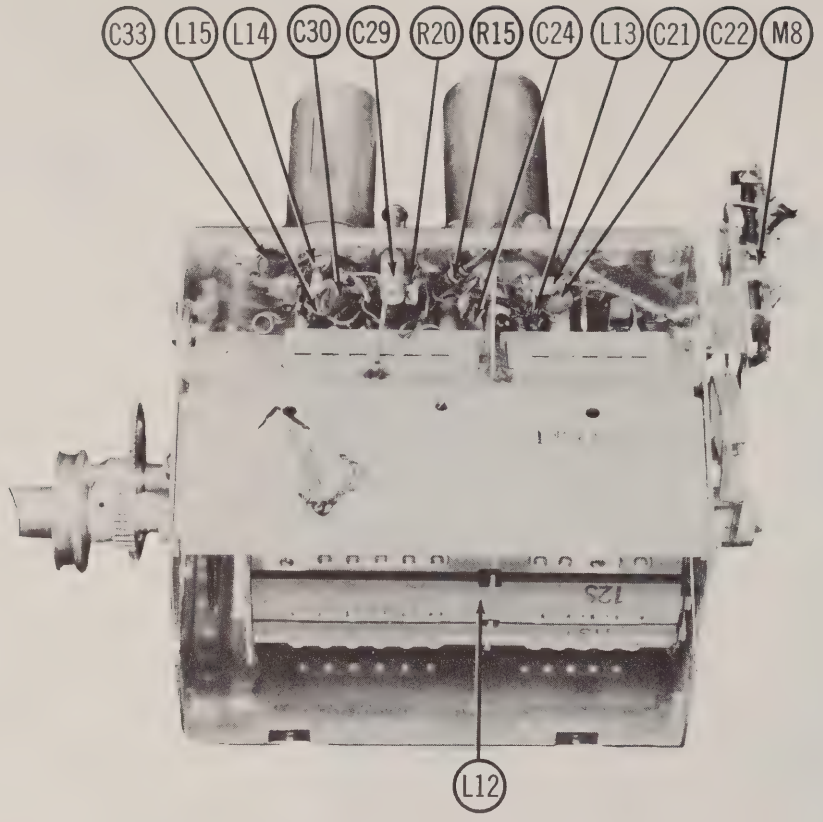
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†▲4.5KΩ	†▲4.5KΩ	0Ω	.1Ω	10KΩ	10KΩ	0Ω		
V 2	6BK7A	INF	1.3Meg	0Ω	.1Ω	0Ω	†3.2KΩ	500KΩ	INF	0Ω
V 3	6J6	†9KΩ	†14.5KΩ	.1Ω	0Ω	190KΩ	10KΩ	0Ω		
V 4	6CB6	122KΩ	47Ω	.1Ω	0Ω	†6.7KΩ	†17KΩ	0Ω		
V 5	6CB6	122KΩ	47Ω	.1Ω	0Ω	†6.7KΩ	†17KΩ	0Ω		
V 6	6CB6	.2Ω	180Ω	.1Ω	0Ω	†4.5KΩ	†4.5KΩ	0Ω		
V 7	6C4	3Meg	INF	.1Ω	0Ω	3Meg	3.3KΩ	.2Ω		
V 8	12BY7	33Ω	3.3KΩ	0Ω	.1Ω	.1Ω	0Ω	†7KΩ	†20KΩ	0Ω
V 9	6AU6	†30KΩ	†4.5KΩ	.1Ω	0Ω	500KΩ	50Ω	†4.5KΩ		
V 10	6AU6	1.7Ω	0Ω	0Ω	.1Ω	†5KΩ	†5KΩ	220Ω		
V 11	6AL5	INF	INF	.1Ω	2.2Ω	15KΩ	0Ω	15KΩ		
V 12	6AT6	3.2Meg	0Ω	0Ω	.1Ω	1.3Meg	800KΩ	†470KΩ		
V 13	6V6GT	INF	.1Ω	†1KΩ	†700Ω	470KΩ	3.5Meg	0Ω	300Ω	
V 14	6BE6	4.5KΩ	0Ω	.1Ω	0Ω	†30KΩ	†26KΩ	2.4Meg		
V 15	6AB4	†5KΩ	INF	0Ω	.1Ω	INF	†1Meg	680Ω		
V 16	12AU7	●500KΩ	25KΩ	400Ω	.1Ω	.1Ω	●4.2Meg	1.5Meg	0Ω	0Ω
V 17	6AU5GT	2.2Meg	0Ω	400Ω	INF	†635Ω	INF	.1Ω	†60KΩ	
V 18	6AL5	10KΩ	10KΩ	.1Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 19	6SN7GTA	5.3Meg	†15KΩ	1.8KΩ	100KΩ	†150KΩ	1.8KΩ	0Ω	.1Ω	
V 20	6CD6G	INF	0Ω	150Ω	INF	500KΩ	INF	.1Ω	†4.5KΩ	Top Cap ●15Ω
V 21	6AU4GT	INF	INF	8Meg	INF	†55Ω	INF	0Ω	.1Ω	
V 22	1B3GT	PINS 1 - 8 HAVE INFINITE RESISTANCE								Top Cap ●500Ω
V 23	5U4G	INF	40KΩ	INF	14Ω	INF	14Ω	INF	40KΩ	
V 24	5U4G	INF	40KΩ	INF	13Ω	INF	13Ω	INF	40KΩ	
V 25	24DP4A	0Ω	†1.6Meg	Pin 6 †50Ω	Pin 10 ●47KΩ	Pin 11 †40KΩ	Pin 12 .1Ω			

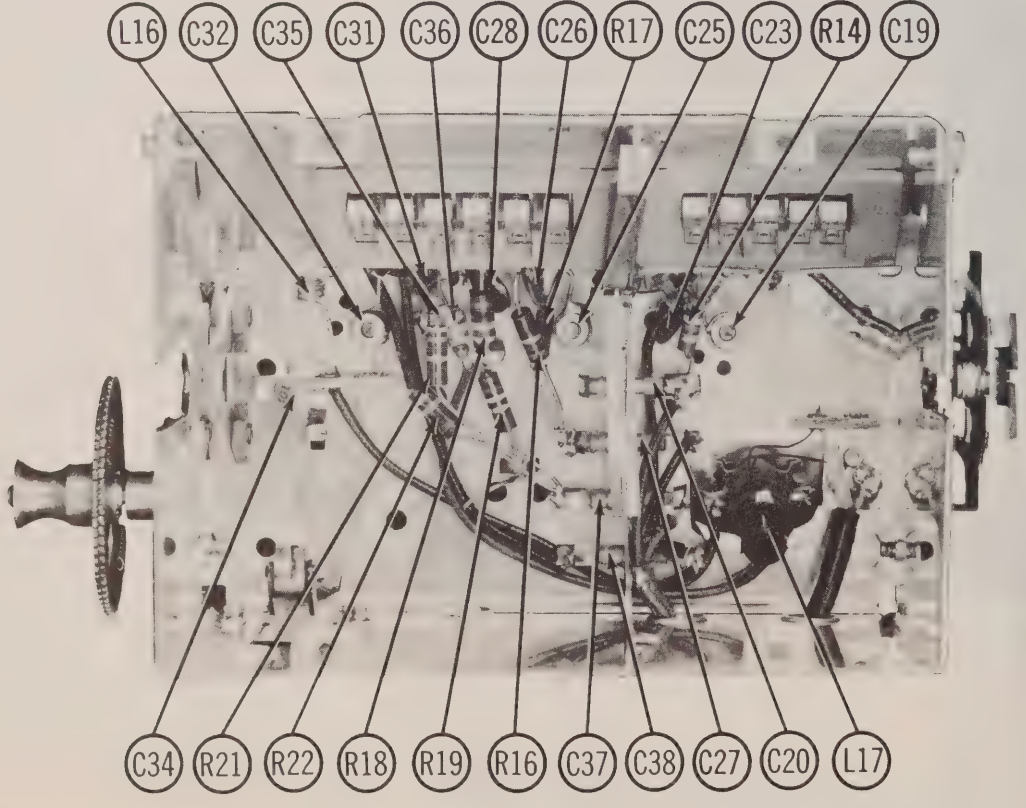
† MEASURED FROM PIN 8 OF V24
▲ MEASURED IN "UHF" POSITION
● MEASURED FROM PIN 3 OF V21
ALL MEASUREMENTS TAKEN IN "VHF" POSITION UNLESS OTHERWISE DESIGNATED.



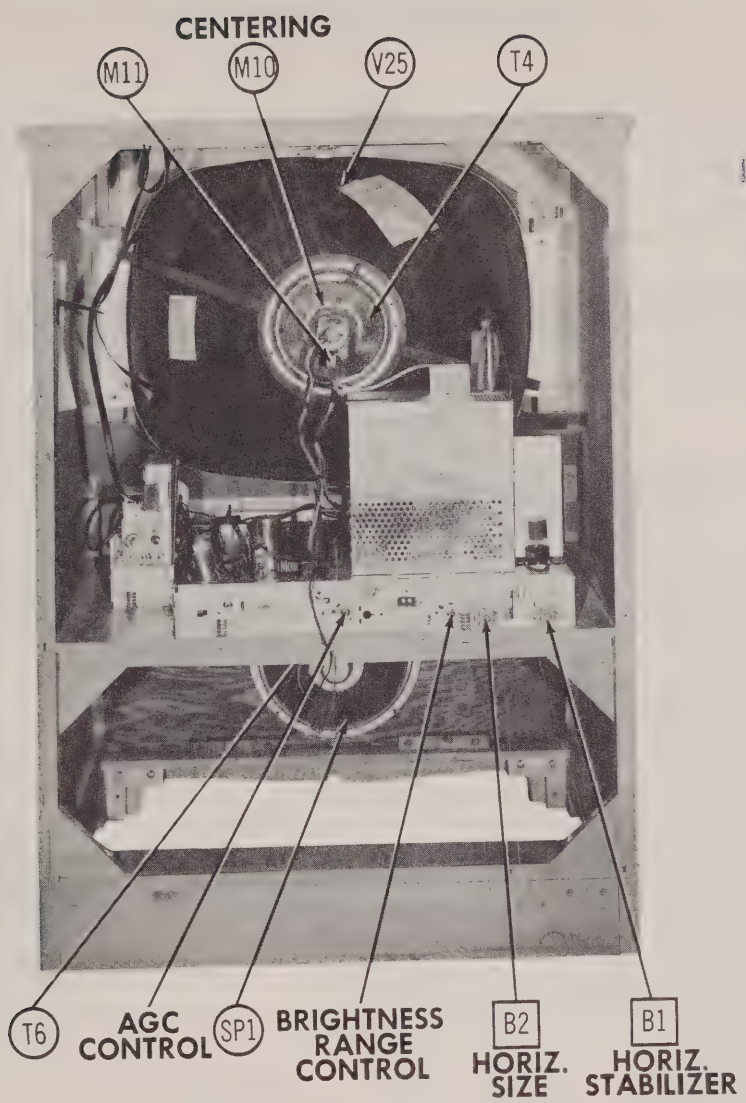
TUBE PLACEMENT CHART



VHF TUNER-RIGHT SIDE



VHF TUNER-LEFT SIDE



CABINET—REAR VIEW

DENVER,

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV station.

Set the horizontal hold control (R4A) to its mid-range position.

Adjust the horizontal oscillator slug (B1) to the center of its effective synchronizing range then momentarily remove signal by switching off channel and back again. Picture should pull in sync. If it doesn't, readjust B1 until picture pulls in sync. Adjust the horizontal width slug (B2) for a picture that is slightly wider than necessary to fill out the mask horizontally. Adjust the picture stabilizer control (R2B) for a picture with stable sync.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V19, V20, V21, V23 and V24. Check adjustment B2. Check T2, T4A, R124, C107 and other associated components.

DRIVE LINES

Check by substitution V20 and V21. Check R116, R121, C106, C107, C109 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V20 and V21. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V19, V20 and V21. Check C101 for open. Check L36, C104, R111 and other associated components.

XMAS TREE EFFECT

Check by substitution V19, V20 and V21. Check T2 and T4 for internal arcing. Check L36, C104, C103, R109, R110, R114 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V16 and V17. Check waveform W11.

If Satisfactory	If Unsatisfactory
Check T3, T4B, R101, R100, R102, C2C, C6 and other associated components.	Check R5, R97, R94, C95, C93, C92 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V16 and V17. Check vertical size and vertical linearity controls for proper operation. Check T3, T4B, R97 and other associated components.

COMPESSED AT BOTTOM

Check by substitution V16 and V17. Check R97, R5, R94 and other associated components.

COMPRESSED AT TOP

Check by substitution V16 and V17. Check R100, R3, C6, C95, T3 and other associated components.

FOLDS

Check by substitution V16 and V17. Check C94, C95, R98, R100 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V14 and V15. Check R85, R84, R88, R92, C86, C87, C89, C88 and other associated components.

LOSS OF VERTICAL SYNC - HORIZONTAL SYNC SATISFACTORY

Substitute V16. Check vertical integrator network. Check C92, C93, R94, R96, R4B and other associated components.

LOSS OF HORIZONTAL SYNC - VERTICAL SYNC SATISFACTORY

Check by substitution V18 and V19. Check horizontal AFC network. Check C97, C104, C103, L36, R111, R110, R109 and other associated components.

HORIZONTAL BENDING

Check by substitution V9, V14, V15, V18 and V19. Check horizontal AFC network.

VIDEO

LOSS OF VIDEO

Substitute V8. Check R46, R47, R48, C64, C61, C1C, L33 and other associated components.

SOUND BARS (4.5MC Beat)

Adjust tuner fine tuning for best sound and picture. Check adjustment A9. Check video IF alignment.

POOR CONTRAST

Check by substitution V7 and V8. Check L27, L28, L29, L30, L31, R47, R50, C64, C60 and other associated components.

NEGATIVE PICTURE

Substitute V8. Check picture tube. Check video detector network. Check L30, L31, C61, C64 and other associated components.

SMEAR

Substitute V8. Check L27, L28, L29, L30, L31, C54, R50, R47 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V1, V3, V4, V5, V6, V7 and V8 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V10, V11, V12 and V13. Check stages V12 and V13 using audio signal generator. Apply audio signal across R1B.

If Satisfactory	If Unsatisfactory
Check ratio detector and audio IF stages for component failure or change of value.	Check C79, C81, C84, C1D, R76, R77, R79, R80, T6, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustment A12. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound". Check C107, R121, R118 and C108.

POWER

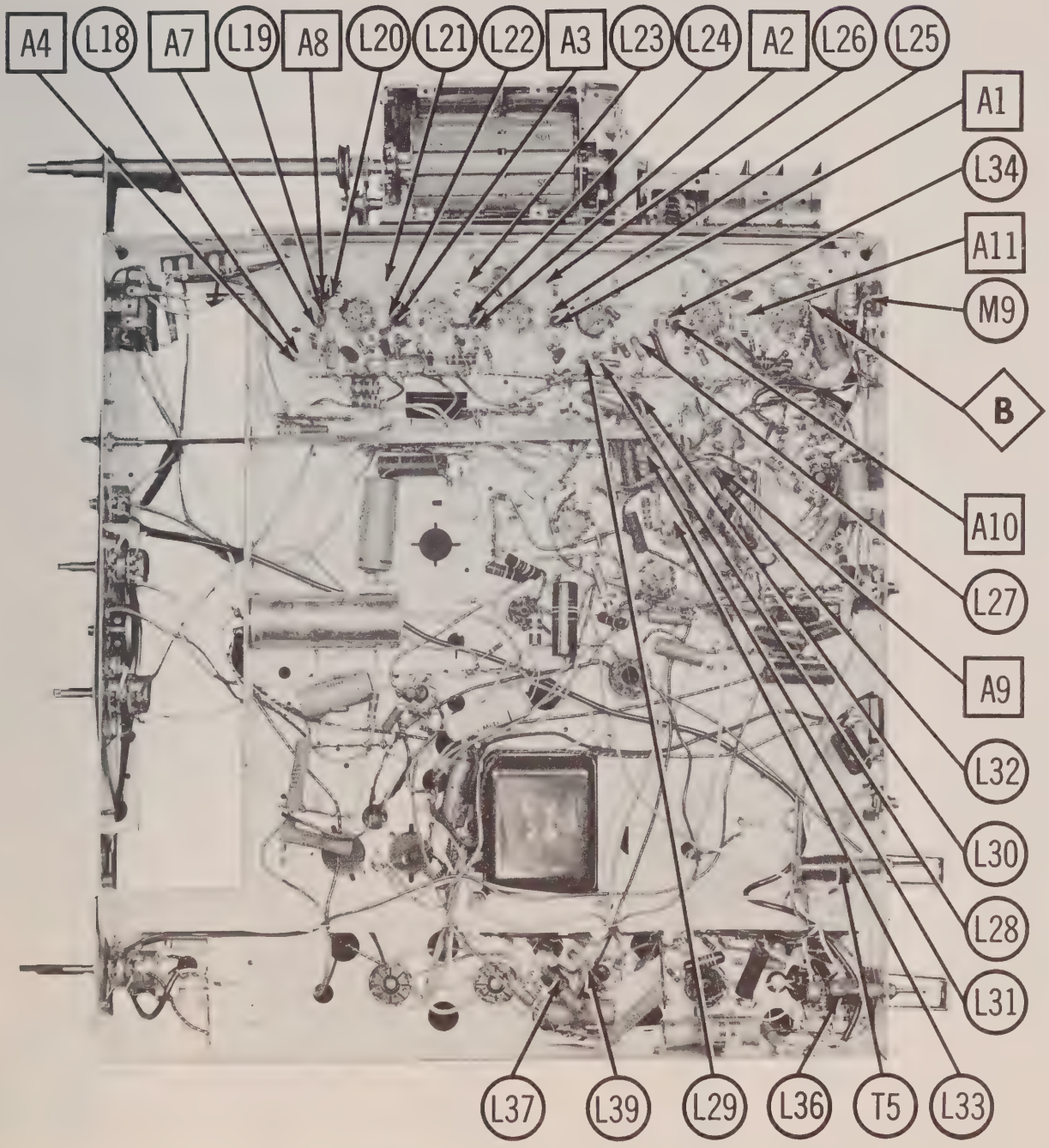
DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, check by substitution V23 and V24. Check B+ filter and decoupling network. Check M1 fuse.

SMALL AND/OR DIM PICTURE

Check by substitution V23 and V24. Check B+ filter and decoupling network.

L. F. BL... CHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

SET 270 FOLDER 4

DUMONT

CHASSIS RA-301, RA-301-A1, RA-302

CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		DUMONT PART No.	STANDARD REPLACEMENT		
V1	UHF Osc.	6J6	6J6	7BF	
V2	RF Amp.	6BK7A	6BK7A	9AJ	
V3	Mixer-Osc.	6J6	6J6	7BF	
V4	1st Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Det.	6C4	6C4	6BG	
V8	Video Output	12BY7	12BY7	9BF	
V9	AGC Keying	6AU6	6AU6	7BK	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Det.	6AL5	6AL5	6BT	
V12	AF Amp. - AGC Clamper	6AT6	6AT6	7BT	
V13	Audio Output	6V6GT	6V6GT	7S	
V14	Sync Sep.	6BE6	6BE6	7CH	
V15	Sync Phase Inv.	6AB4	6AB4	5CE	
V16	Vert. Mult.	12AU7	12AU7	9A	
V17	Vert. Output	6AU5GT	6AU5GT	6CK	
V18	Horiz. AFC	6AL5	6AL5	6BT	
V19	Horiz. Mult.	6SN7GTA	6SN7GTA	8BD	
V20	Horiz. Output	6CD6G	6CD6G	5BT	
V21	Damper	6AU4GT	6AU4GT	4CG	
V22	HV Rectifier	1B3GT	1B3GT	3C	
V23	LV Rectifier	5U4G	5U4G	5T	
V24	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	DUMONT PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V25	24DP4A			24DP4A ①	24DP4A ①	12L	① Aluminized

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲30	400	03130811	AFH4-17		D016		FP444.4	TVL-4766	
B	■10	400								
C	▲10	400								
D	10	400								
C2A	■30	400	03138731	AFH3-40		C031		FP377.6	TVL-3790	
B	▲60	400								
C	▲10	250								
C3	5	50	03120960	PRS150/4		BR550		TC30	TVA-1303	
C4	50	25	03000020	PRS25/50		BR502		TC29	TVA-1206	
C5	4	400	03115080	PRS450/4		BR445		TC70	TVA-1702	
C6	100	50	03138770	PRS50/100		BRH501		TC3501	TVA-1310	
C7	25	50	03138760	PRS50/25		BR255		TC36	TVA-1306	
C8	10	350	03250411	E26D190					R1468	Note 1
C9	10		03125110	SI10NP0	TCZ-10	Z018	NP0A-100	ZT-541	5TCC-Q1	
C10	4.7		03014560	SI4.7NP0	TCZ-4.7		NP0A-4R7	ZT-555	5TCCB-V47	
C11	4.7		03126140				N330-331-4R7			
C12	4.7		03126140				N330-331-4R7			
C13	.7-2		03125180		829-3		3115-01-0R5	CT565A		
C14	800		03125500	BPD-801	DD-102	K069	801-001	DC-521	5HK-D1	
C15	800			EF-001	MFT-1000				503C-D1	
C16	800			EF-001	MFT-1000				503C-D1	
C17	33		03126130	SI33NP0	TCZ-33	Z029	NP0K-330	ZT-5433	5TCC-Q33	
C18	100			BPD-101	D6-101	G042	801-101	UC-531	5GA-T1	
C19	1-3		03019840		829-4		3115-01-10	CT551		
C20	1000			EF-001	MFT-1000				503C-D1	
C21	1.8		03125010							
C22	5		03124780	SI5NP0	TCZ-4.7	Z011	NP0A-050	ZT-555	5TCCB-V47	
C23	800		03124790	BPD-801	DD-102	K069	801-001	DC-521	5HK-D1	
C24	800		03124790	BPD-801	DD-102	K069	801-001	DC-521	5HK-D1	
C25	.7-2		03124770		829-3		3115-01-0R5	CT565A		
C26	47		03119170	BPD-470	D6-470	G033	831-470	UC-5447	5GA-Q47	
C27	1000			EF-001	MFT-1000				503C-D1	
C28	47		03119170	BPD-470	D6-470	G033	831-470	UC-5447	5GA-Q47	
C29	1-3		03019840		829-4		3115-01-10	CT551		
C30	10		03126010	SI10N750	TCN-10	N018	N750K-100	NT-541	5TCU-Q1	
C31	10		03126010	SI10N750	TCN-10	N018	N750K-100	NT-541	5TCU-Q1	
C32	1-3		03019840		829-4		3115-01-10	CT551		
C33	800		03124790	BPD-801	DD-102	K069	801-001	DC-521	5HK-D1	
C34	10		03125110	SI10NP0	TCZ-10	Z018	NP0A-100	ZT-541	5TCC-Q1	
C35	10		03125110	SI10NP0	TCZ-10	Z018	NP0A-100	ZT-541	5TCC-Q1	
C36	1-5		03125000	SI1.5NP0	TCZ-1.5	TZ04	NP0A-1R5	ZT-5515	5TCCB-V15	
C37	1000			EF-001	MFT-1000				503C-D1	
C38	1000			EF-001	MFT-1000				503C-D1	
C39	1000		03100490	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C40	1000		03100490	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C41	5000		03015610	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C42	.1	200	03126860	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C43	.5-3		03137300		829-3		3115-01-0R5	CT565A		
C44	1000		03100490	BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C45	1		03012150	SI1NP0	TCZ-1	TZ03	NP0A-010		5TCCB-V1	
C46	27		03131320	SI27NP0	TCZ-27	TZ16	NP0K-27		5TCC-Q27	
C47	1500		03017850	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C48	680		03121520	SI680	D6-681	TP50	GP2K-681	UC-5368	5GA-T68	
C49	1500		03017850	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C50	5000		03015610	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C51	1.0	100	03122800	484-1.0		CUB2W1		PT41	2TM-M1	
C52	1500		0317850	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C53	680		03121520	SI680	D6-680	TP50	GP2K-681	UC-5368	5GA-T68	
C54	680		03121520	SI680	D6-680	TP50	GP2K-681	UC-5368	5GA-T68	
C55	1500		03017850	BPD-0015	DD-152	K071	801-0015	DC-5215	5HK-D15	
C56	470		03121560	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C57	1000		03100490	SI1000	D6-102	TP52	GP2L-102	UC-521	5HK-D1	
C58	5		03014610				N470K-050			

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA DUMONT Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C59	5		03046410				M470K-S60			
C60	.005	300	03126510	P288-015		CUB8S15		PT4115	5TM-S15	
C61	47		03015780	S147NP0	TCZ-47	TZ3S	NP0K-470	Z7-5447	5TCC-Q47	
C62	33		03013230	S133NP0	TCZ-33	TZ3S	NP0K-330	Z7-5433	5TCC-Q33	
C63	15		03017910	S115NP0	TCZ-15	TZ3S	NP0K-150	Z7-5415	5TCC-Q15	
C64	.1	400	03127620	P469-1		DF-104	CUB4P1	PT4G1	4TM-P1	
C65	10000		03015620	P288-103		DD-103	S1L-01	DC-511	5HK-S1	
C66	.047	300	03126840	P288-047		DF-503	CUB2S47	PT4147	2TM-S47	
C67	.1	300	03126660	P288-1		DF-104	CUB2P1	PT4G1	2TM-P1	
C68	.01	600	03128180	P469-103		DF-103	CUB4S3	PT4G3	4TM-S3	
C69	1000	2000	03123420	HVD36-001		DD30-102	32KV-102		20GA-D1	
C70	.22	300	03126480	P288-22			CUB4P22	PT4G22	4TM-P22	
C71	.022	300	03126540	P488-022		DF-303	CUB4S22	S1T-02	PT4122	4TM-S22
C72	5		03NP50	TCM-5		NU1	M750A-050		5TCUB-V5	Note 2
C73	47		03015760	S147NP0	TCZ-47	TZ3S	NP0K-470	Z7-5447	5TCC-Q47	
C74	10000		03015920	BPD-01		DD-103	K063	S1L-01	DC-511	5HK-S1
C75	10000		03015920	BPD-01		DD-103	K063	S1L-01	DC-511	5HK-S1
C76	5000		03015810	BPD-005		DD-502	K080	S1L-005	DC-525	5HK-D5
C77	680		03125120	S1680		D6-581	TP50	GP2K-681	UC-5268	5CA-T68
C78	.0033	600	03128120	P469-0033		DF-332	CUB4D33	GP2-333-332	PT4332	4TM-D33
C79	.01	300	03126900	P486-01		D6-103	CUB4S1	GP2-333-103	PT4U	4TM-S1
C80	.047	300	03126840	P288-047		DF-503	CUB2S47		PT4147	2TM-S47
C81	1000		03100490	BPD-001		DD-102	K069	S01-001	DC-531	5HK-D1
C82	10000		03015920	BPD-01		DD-103	K063	S1L-01	DC-511	5HK-S1
C83	2200		03124190	BPD-0022		DD-202		S01-002	DC-532	5HK-D22
C84	30000		03123430	BPD-03		DF-303	K065	S1T-03	PT4I3	5HK-S3
C85	5000		03015810	BPD-005		DD-502	K080	S1L-005	DC-525	5HK-D5
C86	.022	600	03128180	P488-022		DF-303	CUB6S22	S1T-03	PT6122	6TM-S22
C87	330		03014590	S1330		D6-331	TP43	GP2K-331	UC-5333	5CA-T33
C88	.1	200	03126860	P288-1		DF-104	CUB2P1		PT4G1	2TM-P1
C89	.022	400	03127580	P488-023		DF-503	CUB4S23	S1T-03	PT4123	4TM-S22
C90A	2000								PT623	
B	5000		●88000631	●PA-110	●PC-100	●1S7TM1	●1465-01		PT625	●V-1
C	5000								PT625	
C91	.0047	400	03127080	1464-472			ER3D47		MC2E45	MS-25
C92	.0022	400	03127940	1464-222			ER3D22		MC2E40	MS-22
C93	4700	500		1464-472			ER3D47		MC2E65	MS-25 Note 3
C94	.1	400	03127940							
C95	.1	600	03128230	P488-1		DF-104	CUB4P1		PT4G1	6TM-P1
C96	.1	200	03126860	P288-1		DF-104	CUB2P1		PT4G1	2TM-P1
C97	.001	600	03128100	P488-001		D6-102	CUB4D1	GP2L-102	PT621	6TM-D1
C98	.001	600	03128100	P488-001		D6-102	CUB4D1	GP2L-102	PT621	6TM-D1
C99	.01	600	03127560	P488-01		D6-103	CUB4S1	GP2-333-103	PT4G1	6TM-S1
C100	.0033	400	03127530	P488-0033		D6-332	CUB4D33	GP2-333-332	PT4G33	6TM-D33
C101	.033	300	03126340	P488-033			CUB4S3		PT4133	6TM-S3
C102	18		03121530							
C103	390	500	03021110	1469-391			5R5T39		MC2E43	MS-34
C104	4700	500	03013340	1464-472			ER3D47		MC2E65	MS-25
C105	10000		03015920	BPD-01		DD-103	K063	S1L-01	DC-511	5HK-S1
C106	390	500	03021110	1469-391			5R5T39		MC2E43	MS-34
C107	.0047	500	03128140	P488-0047		D6-472	CUB4D47	GP2-333-472	PT6347	6TM-D47
C108	.047	300	03126840	P288-047		DF-503	CUB2S47		PT4147	2TM-S47
C109	10000		03015810	BPD-005		DD-502	K080	S1L-01	DC-511	5HK-S1
C110	5000		03015810	BPD-005		DD-502	K080	S1L-005	DC-525	5HK-D5
C111	.047	600	03127900	P488-047		DF-503	CUB4S47		PT4147	6TM-S47
C112	.1	600	03141320	P488-1		DF-104	CUB4P1		PT4G1	6TM-P1
C113	.1	600	03141320	P488-1		DF-104	CUB4P1		PT4G1	6TM-P1
C114	120	4000	03123463			DD30-121				
C115	105	2000	03123462							
C116	.01	600	03127760	P488-01		D6-103	CUB4S1	GP2-333-103	PT4U1	6TM-S1
C117	.01	600	03125760	P488-01		D6-103	CUB4S1	GP2-333-103	PT4U1	6TM-S1
C118	500	20000		HV20C		TY3-502	MMU20TY5	413	HV20035A	20DK-TY5 Note 4

Note 1. Semi-polarized unit.
Note 2. Some versions use 2.2MMF in this application (part no. 03016540).
Note 3. Some versions use .0022MFD in this application (part no. 03127040).
Note 4. Not used in some versions.
● Items C90A, C90B, C90C, R83A, R93B, R93C are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DUMONT Part No.	IRC Part No.	CLAROSTAT Part No.	CENTRALAB Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	1Meg	½	01053132	*QJ-549	RTV-89		UF1SL	Brightness - Panel
B	1Meg	½					UR1S-71253	Volume tapped at 50KΩ - Rear
C	Switch						UB-26	Attach to R1B
R2A	1Meg	½	01038347	*QJ-541	RTV-452		UF1SA	Tone - Panel
B	5Meg	½					UR5SL	Picture Stabilizer - Rear
R3A	5000Ω	2	01034740	WK-5000	A45-5000	VK-135	R5000L	Vert. Linearity Wire Wound
B	Shaft		Not Req.	Not Req.	FK8-1/4	Not Req.	Not Req.	Attach to R3A
R4A	50KΩ	½	01056003	*eQJ-542	RTV-453		UF54L	Horiz. Hold - Panel
B	1.5Meg with 40KΩ stop	½					UR3SL	Vert. Hold - Rear - Note
R5A	3Meg	½	01051010	QU1-140	A47-3Meg-S	AB-34	SU-59	Vert. Size
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attch to R5A
R6	15KΩ	½	01057300	QJ3-153XX				Centrat tapped at 6KΩ and 4KΩ
R7A	100KΩ	½	01053800	QU1-123	A47-100K-S	AB-40	SU-61	AGC
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R7A
R8A	3Meg	½	01051010	QU1-140	A47-3Meg-S	AB-34	SU-59	Brightness Range
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R8A
R9A	3Meg	½	01051010	QU1-140	A47-3Meg-S	AB-34	SU-59	AGC Delay
B	Shaft		Not Req.	Not Req.	FK8-1/4	AK-1	Not Req.	Attach to R9A

* CONCENTRIKIT EQUIVALENT: KIT K-2, BASE ELEMENTS & SHAFTS: BU-137 & P6-122 (PANEL)
BU-137X & RI-207 (REAR)
76-1 SWITCH
BU-139 & P1-528 (PANEL)
BU-139 & RI2-108 (REAR)

♦ CONCENTRIKIT EQUIVALENT: KIT K-2, BASE ELEMENTS & SHAFTS: BU-123 & P1-528 (PANEL)
BU-141 & RI2-108 (REAR)

♦♦ CONCENTRIKIT EQUIVALENT: KIT K-2, BASE ELEMENTS & SHAFTS: BU-123 & P1-528 (PANEL)
BU-139 & RI2-108 (REAR)

† Universal Replacement (Mallory exact duplicate part no. UE161)
Note: Connect a 39KΩ resistor in series with the left hand terminal of the control and the lead connecting to the same terminal of the original control. (Control viewed from shaft end, terminals down.)

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA DUMONT Part No.	IRC Part No.	NOTES
R10	270Ω	½	03031700	BTS-270	
R11	10KΩ	½	03031880	BTS-10K	
R12	470Ω	½	03031730	BTS-470	
R13	47Ω	½	03031610	BTS-47	
R14	3900Ω	½	03031940	BTS-3900	
R15	820KΩ 5%	½	03046180	BTS-820K 5%	
R16	470Ω	½	03041730	BTS-470	
R17	1Meg 5%	½	03041300	BTS-1Meg 5%	
R18	10KΩ	½	03031890	BTS-10K	
R19	180KΩ	½	03031849	BTS-180K	
R20	10KΩ	½	03031890	BTS-10K	
R21	4700Ω	½	03031850	BTS-4700	
R22	10KΩ	½	03031890	BTS-10K	
R23	10KΩ	½	03031890	BTS-10K	
R24	2700Ω	½	03031700	BTS-270	
R25	22KΩ	½	03031930	BTS-22K	
R26	47Ω	½	03031610	BTS-47	
R27	100KΩ	½	03031830	BTS-1000	
R28	470Ω	½	03032400	BTS-470	
R29	100KΩ	½	03031779	BTS-1000	
R30	56KΩ	½	03031980	BTS-56K	
R31	47Ω	½	03031610	BTS-47	
R32	100KΩ	½	03032450	BTS-1000	
R33	470Ω	½	03032400	BTS-470	
R34	33KΩ	½	03031960	BTS-33K	
R35	33KΩ	½	03037950	BTS-33K	
R36	3300Ω	½	03037830	BTS-3300	
R37	3300Ω	½	03037830	BTS-3300	
R38	4500Ω	10	02123960	1 3/4A-4500	
R39	56KΩ	½	03031980	BTS-56K	
R40	180Ω	½	03031680	BTS-180	
R41	470Ω	½	03031700	BTS-470	
R42	33KΩ	½	03031850	BTS-33K	
R43	3300Ω	½	03031830	BTS-3300	
R44	4700Ω	½	03031850	BTS-4700	
R45	33Ω	½	03031690	BTS-33	
R46	4700Ω	½	03031850	BTA-4700	
R47	3300Ω	½	03031880	BTS-3300	
R48	7000Ω	10	02123930	1 3/4A-7000	
R49	1500Ω	½	03031900	BTS-1500	
R50	120KΩ	½	03032030	BTS-120K	
R51	270KΩ	½	03032060	BTS-270K	
R52	1Meg	½	03031800	BTS-1Meg	
R53	100KΩ	½	03032000	BTS-100K	
R54	1Meg	½	03032130	BTS-1Meg	
R55	39KΩ	½	03031960	BTS-39K	
R56	33KΩ	½	03031960	BTS-33K	
R57	47KΩ	½	03031970	BTS-47K	
R58	10KΩ	½	03031890	BTS-10K	
R59	390KΩ 5%	½	03031100	BTS-390K 5%	
R60	100KΩ 5%	½	03030980	BTS-100K 5%	
R61	27KΩ	½	03031920	BTS-27K	Note 1
R62	68KΩ	½	03031990	BTA-68K	
R63	470KΩ 5%	½	03031120	BTS-470K 5%	
R64	470KΩ	½	03032090	BTS-470K	
R65	3.6MegΩ 5%	½	03031330	BTS-3.6Meg 5%	
R66	47KΩ	½	03031130	BTS-47K	
R67	220Ω	½	03031690	BTS-220	
R68	1000Ω	½	03032420	BTS-1000	
R69	390Ω	½	03031720	BTS-390	
R70	22KΩ	½	03031930	BTS-22K	
R71	15KΩ	½	03031910	BTS-15K	
R72	15KΩ	½	03031910	BTS-15K	
R73	12KΩ	½	03031900	BTS-12K	
R74	1Meg	½	03042800	BTS-1Meg	
R75	1Meg	½	03042800	BTS-1Meg	
R76	470KΩ	½	03032580	BTS-470K	
R77	680Ω	½	03031830		
R78	470KΩ	½	03032090	BTA-470K	
R79	390Ω	1	03034720	BTA-390	
R80	680Ω	1	03031750	BTA-680	
R81	3.3Meg	½	03032190	BTS-3.3Meg	
R82	33KΩ	½	03031950	BTS-33K	
R83	560KΩ	½	03032100	BTS-560K	
R84	22KΩ	3	03037930	BTS-22K	
R85	15KΩ	3	03031810	BTS-15K	
R86	220KΩ	½		BTS-220K	
R87	2.2MegΩ	½	03032170	BTS-2.2Meg	
R88	100KΩ	½	03032010	BTS-100K	
R89	33KΩ	½	03031950	BTS-33K	
R90	1Meg	½	03032800	BTS-1Meg	
R91	680Ω 5%	½	03030440	BTS-680 5%	
R92	680Ω 5%	½	03030440	BTS-680 5%	
R93A	22KΩ	½		BTS-22K	
B	820Ω	½	● 88000631	BTS-820Ω	
C	820Ω	½		BTS-820Ω	
R94	470KΩ	½	03038090	BTS-470K	
R95	22KΩ	½	03041330	BTS-22K	
R96	1Meg	½	03031880	BTS-1Meg	
R97	2.2Meg	½	03032170	BTS-2.2Meg	
R98	100Ω	½	03030480	BTS-100	
R99	2.2Meg	½	03032620	BTS-2.2Meg	
R100	390Ω	1	03034720	BTA-390	
R101	100KΩ	½	03031810	BTS-100K	
R102	82KΩ	½	03032000	BTS-82K	
R103	560Ω	½	03031740	BTS-560	
R104	560Ω	½	03031740	BTS-560	
R105	100KΩ	½	03032010	BTS-100K	
R106	100KΩ	½	03032010	BTS-100K	
R107	680KΩ	½	03032110	BTS-680K	
R108	4.7MegΩ	½	03032210	BTS-4.7Meg	
R109	18001 5%	½	03030540	BTS-1800 5%	
R110	82003 5%	½	03030700	BTS-8200 5%	
R111	47KΩ	½	03031970	BTS-47K	
R112	470KΩ	½	03032090	BTS-470K	
R113	100KΩ	½	03032010	BTS-100K	
R114	150KΩ	½	03032030	BTS-150K	
R115	6300Ω	½	03034670	BTA-6800	
R116	12KΩ 5%	½	03030740	BTS-12K 5%	
R117	2.2Meg	½	03032620	BTS-2.2Meg	
R118	1Meg	½	03042800	BTS-1Meg	
R119	68Ω	½	03032350	BTS-680	
R120	470KΩ	½	03032580	BTS-470K	
R121	22KΩ	½	03032510	BTS-22K	
R122	150Ω	4	03219120		
R123	68Ω	½	03032350	BTS-68	
R124	4500Ω	10	02123760	1 3/4A-4500	
R125	47KΩ	1	03034970	BTA-47K	
R126	10KΩ	3	03037890	BTS-10K	
R127	1000Ω	½	03032430	BTS-1000	
R128	4000Ω	10	02123950	1 3/4A-4000	
R129	100KΩ	1	03035540	BTA-100K	
R130	3.3Ω	1	02100770		

♦ Items R93A, R93B, R93C, C90A, C90B & C90C are combined in one unit.
Note 1: Some versions may use a 18KΩ resistor in this application.
Note 2: Some versions may use a 2.2Meg resistor in this application.

TRANSFORMER (POWER)

ITEM No	RATING PRI	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA DUMONT Part No	Stancor Part No	Triad Part No	RCA TYPE No	Hallobrson Part No	Thordarson Part No
T1	117VAC ① 2.3A	564VCT ③ 330ADC	5VAC ④ 6A	20008901	P-8167 ①			P8739 ②	26R00 ② ④
	SEC. 3	SEC. 4	SEC. 5						
	12.6VCT @ 5.2A								

① Drill new mounting holes.
② Series 6.3 volt windings for sec. #3.
③ Use low voltage secondary tap.
④ Series-parallel 6.3 volt windings for sec. #3.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA DUMONT Part No.	Hallobrson Part No.	Merit Part No.	RCA Part No.	Rom Part No.	Stancor TYPE No.	Thordarson Part No.	Triad Part No.
T2	Horiz. Output Trans.	20008601	FB419 & RF500 *		2357T & 324R1 *	X094 & 20R14 *	A-8115 ①	FLY-18 & WC-20 *	D-50 & WC-1 *
T3	Vert. Output Trans.	20008711	21S00 ①	A-3035 ①				24S69 ①	A-20YZ
T4A	Yoke(90°) Horiz. (2.3MH)	21012351	DF606 ①	MDF-90③	2190 ③ ④		DY-13A ③	Y-14 ③	Y-50-1 ③
B	Vert.(40MH)	89013533 ②		④					
T5	Width Coil (2.7-17 MH)	21010501		MWC-6	212R1 ①	20R16 ①	WC-8 ①	WC-18	WC-13 ①⑤

① Drill new mounting hole(s).
② Alternate deflection yoke.
③ Ground terminals #5 and #8, as in original yoke.
④ Use original yoke damping network.
⑤ Connect to coded blue and red terminals.

DENVER, COLORADO

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Hallobrson Replacement Connections	Merit Replacement Connections	RCA Replacement Connections	Rom Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	9	9		9	9		9	9
	7	7		7	7		7	7
	5	See Note ②		See Note ②	See Note ②		See Note ②	See Note ②
	T	T		T	T		T	T
	3	3		3	3		3	3
	1	1		1	1		1	1
Connect Width Coil Across	6	RF500 Term. #3		214R1 Term. "D"	20R14 Outer Winding		WC-20 Term. #1	WC-1 Orange Term
	2	RF500 Term. #4		214R1 Term. "E"	WC-20 Outer Winding		WC-20 Term. #2	WC-1 Black Term
	3 & 1	RF500 Term. #1& #2 Across 3 & 1		214R1 Terms. "A" & "B" across 3 & 1	20R14 Inner Winding Across 3 & 1		WC-20 Term. #3 & #4 Across 3 & 1	WC-1 Red & Blue terms. across 3 & 1
Special Notes		② ⑦		③ ⑦	③ ⑦		③ ⑦	③ ⑦

② Connect capacitor C114 across terminals #5 and #3.
⑦ If the picture is out of phase, reverse width coil primary or secondary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA DUMONT Part No.	Stancor Part No.	Merit Part No.	Triad Part No.	Hallobrson Part No.	Thordarson Part No.	NOTES
T6	4.8KΩ	3.2Ω	Part of speaker	A-3235	A-3019	S-5X	Z10U1	28S49 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA DUMONT Part No.	VIKING Part No.	QUAM Part No.	NOTES
SPI	10"	PM	3.2Ω	18003322	10J1J	10A3I	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA DUMONT Part No.	MEISSNER Part No.	MERIT Part No.	MILLER Part No.	NOTES
L1	UHF Ant. Coupling Coil	0Ω						
L2	UHF Ant. Coupling Coil	0Ω						
L3	UHF RF Coupling Coil	0Ω						
L4	UHF Mixer Coil	0Ω						
L5	UHF Harmonic Coupling Coil	0Ω						
L6	Fil. Choke	0Ω		21J1831				
L7	UHF Osc. Tank Coil	0Ω						
L8	UHF Osc. Tank Shunt Coil	0Ω						
L9	UHF Osc. Coil	0Ω						
L10	UHF RF Choke	.1Ω		21J1821				
L11	UHF IF Output	0Ω	0Ω	21J1841				
L12A	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014881			Channel 2
B	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014882			Channel 3
C	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014883			Channel 4
D	VHF Ant. RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014884			Channel 5
E	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014885			Channel 6
F	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014886			Channel 7
G	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014887			Channel 8
H	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014888			Channel 9
I	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014889			Channel 10
J	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014891			Channel 11
K	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014892			Channel 12
L	VHF Ant., RF, Mixer Grid & Osc. Coils	0Ω	0Ω		40014893			Channel 13
M	UHF IF Coils	0Ω	0Ω		40014896			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	DUMONT PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L13	VHF Neut. Coil	0Ω		21011811				
L14	Fil. Choke	0Ω		21011561				
L15	VHF Feedback Coil	0Ω		2101181l				
L16	VHF RF Coil	0Ω		21011581				
L17	VHF Conv. Plate	.1Ω	.1Ω	21011801				
L18	41.25MC Trap	1.7Ω		21012011	19-1004		4610	
L19	1st Video IF	.1ΩCT		20008741				
L20	47.25MC trap	0Ω		21012201	20-1047			
L21	Fil. Choke	.15Ω		21008972	19-1002		4606	2.1 Microhenries
L22	2nd Video IF	.3Ω	.3Ω	20008570	17-4523		6219	
L23	Fil. Choke	.15Ω		21008972	19-1002		4606	2.1 Microhenries
L24	3rd Video IF	.2Ω	.2Ω	20008731	17-4522		6219	
L25	4th Video IF	.2Ω	.2Ω	20008731	17-4524		6219	
L26	Fil. Choke	.15Ω		21008972	19-1002		4606	2.1 Microhenries
L27	Series Peaking Coil	1.2Ω		21011301	19-1005		4612	10 Microhenries
L28	Series Peaking Coil	1.7Ω		21011082	19-1005		4612	11.5 Microhenries
L29	Shunt Peaking Coil	10Ω		21006628	19-3180	TV-184	6154	197 Microhenries
L30	Series Peaking Coil	6.5Ω		21006622	19-3100	TV-181	4642	110 Microhenries
L31	Series Peaking Coil	10Ω		21006628	19-3180	TV-184	6154	197 Microhenries
L32	4.5MC Trap	1.9Ω		21010962	20-1004	TV-151	1470	
L33	Shunt Peaking Coil	16Ω		21006629	19-3500	TV-188	6174	500 Microhenries
L34	Sound IF	1.7Ω		21012211	17-3400	TV-151	1469	
L35	Ratio Det.	5Ω	.6ΩCT	20008761	17-3497	TV-115	6205	Tertiary winding = .7Ω
L36	Horiz. Osc.	52Ω		21010991	19-1576	TV-163	6210	
L37	RF Choke	6.5Ω		21012191	19-1994	BC-503	4530*	
L38	RF Choke	1.8Ω		21006280	19-1002		4606	2.2 Microhenries; IRC part no. CLA
L39	RF Choke	6.1Ω		21006550	19-1005		4612	8.2 Microhenries; IRC part no. CL-1
L40	RF Choke	1.8Ω		21006280	19-1002		4606	2.2 Microhenries; IRC part no. CLA

* Drill mounting hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	DUMONT PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L41	.330	43.7Ω	2.15HY	21012151	C-2334			C5037 ①	

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DUMONT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG-S/B	3/8A 125V	11000730	11000600	313.375 (3AG-S/B-3/8A)	357001	MDL 3/8	4405

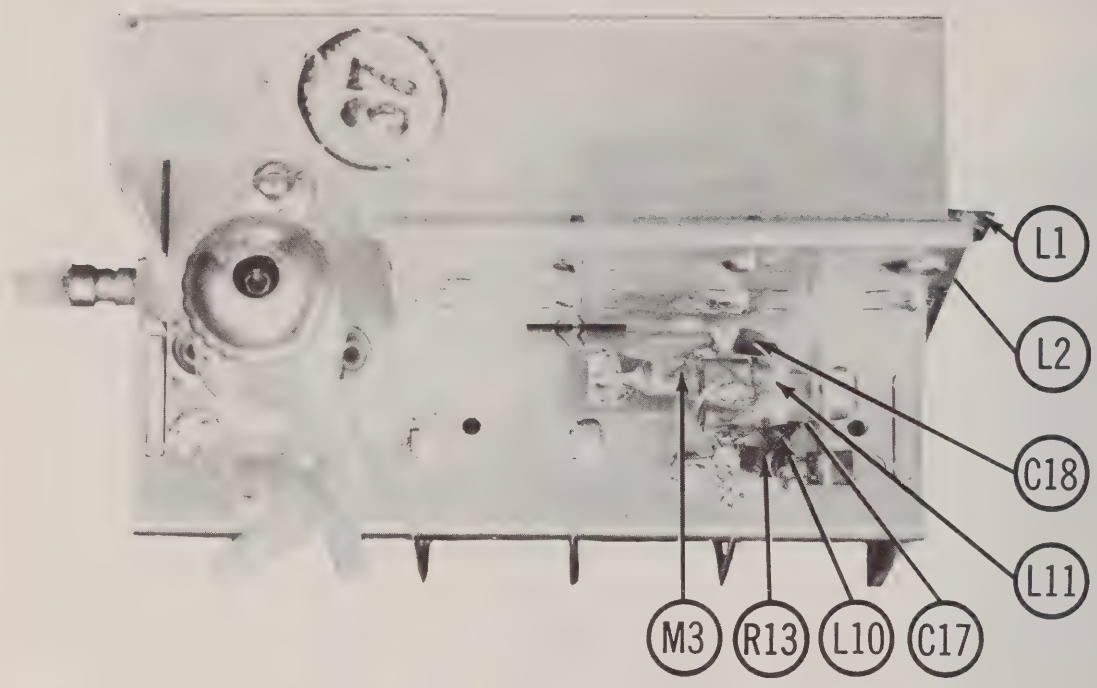
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		DUMONT PART No.	FEDERAL PART No.	SYLVANIA PART No.	
M2	G7C	26001082		1N109	Harmonic Generator
M3	1N82	26001082	1N82	1N82 or 1N82	UHF Mixer

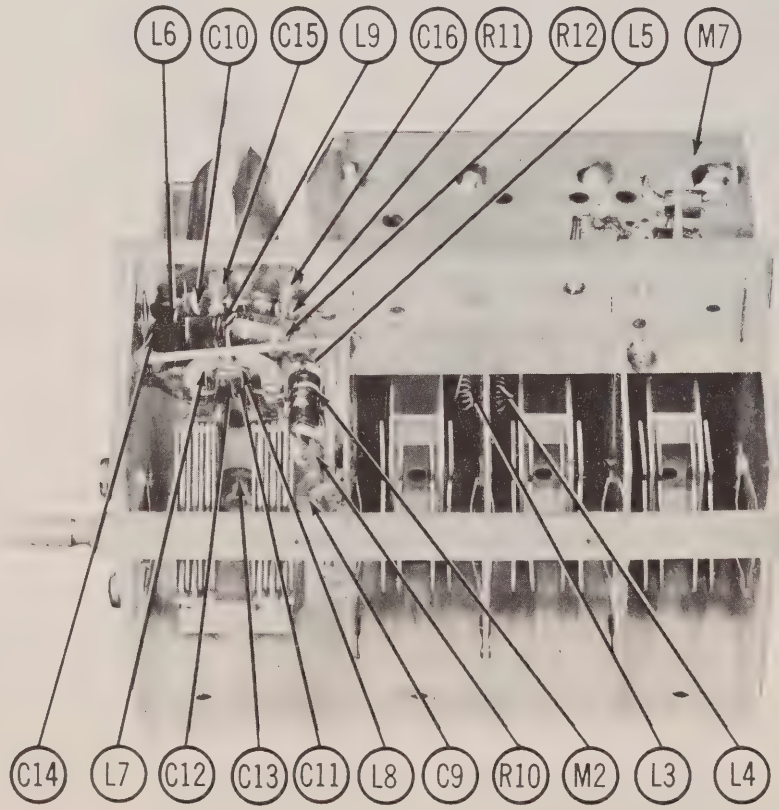
When ordering specify type.

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M4	Jewel Light	12006700	#47, Bayonet
M5A	Tuner	89012911	VHF - Not used in some versions
B	Tuner	89012901	VHF - Not used in some versions
C	Tuner	89012971	VHF - Not used in some versions
M6A	Tuner	89012921	UHF - Not used in some versions
B	Tuner	89013291	UHF - Not used in some versions
M7	Trap	88000731	VHF Ant. Input Filter - Not used in some versions
M8	Switch	05007371	UHF-VHF
M9	Switch	05005120	TV-Phono
M10	Centering Magnet	29000651	
M11	Ion Trap	29006661	
	Knob	45004437	Channel Selector (Mahogany) Chassis RA-302
	Knob	45004438	Channel Selector (Maple) - Chassis RA-302
	Knob	45005485	Channel Selector (Mahogany) Chassis RA-301
	Knob	45005486	Channel Selector (Maple) Chassis RA-301
	Knob	45004441	Fine tuning
	Knob	45004442	Brightness
	Knob	45004451	On-off-volume (Mahogany)
	Knob	45004454	On-off-volume (Maple)
	Knob	45004711	Hidden Control
	Safety Glass	45005151	
	Mask	64010202	
	Dial	45005011	UHF (UHF Tuner part #89013291)



UHF TUNER TOP VIEW



UHF TUNER-BOTTOM VIEW

TROUBLE SHOOTING AIDS (cont)

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V19, V20, V21 and V22. Check waveform W18.

If Satisfactory	If Unsatisfactory
Check T2, T4A, T5, R124, R122, C114, C111, C112, C113, C110 and other associated components.	Check L36, C104, C102, C103, C105, C107, R110, R114, R115, R109 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V20, V21, V23 and V24. Check R122, R124, R116, C106, C107 and other associated components.

BLOOMING

Check by substitution V20, V21, V22, V23 and V24. Check C107, C105, C114, R122, R124 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6, V7 and V8. Check video IF stages for component failure or change of value.

NO RASTER, DISTORTED SOUND

Check components in horizontal osc. circuit for distorted sound. Check waveform W18 for no raster.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set"

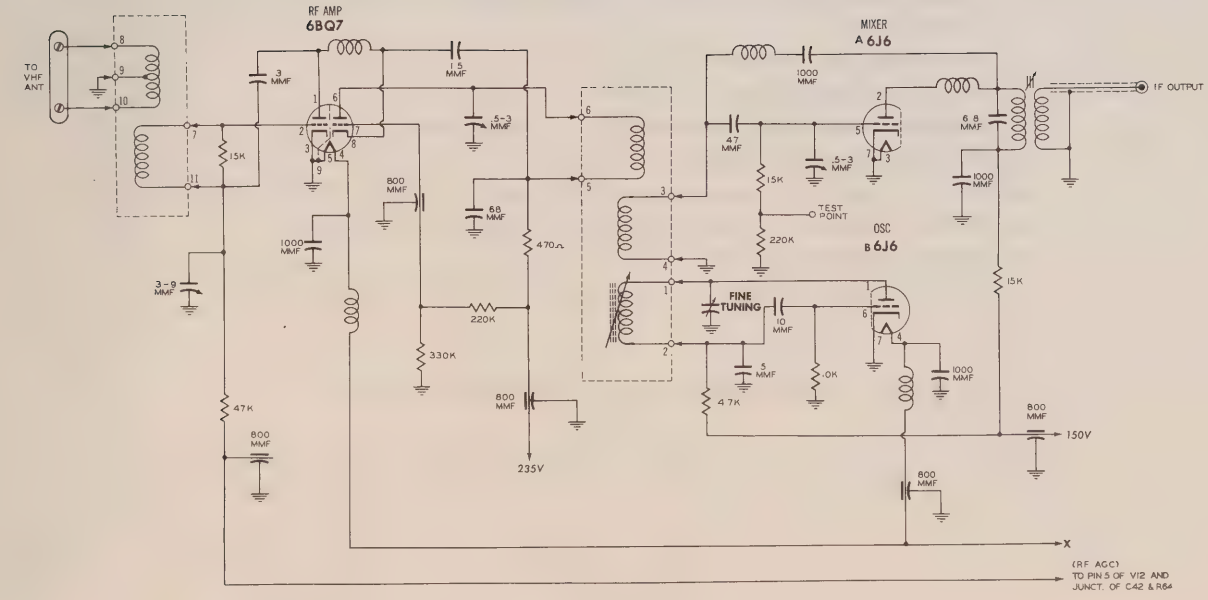
KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



ALTERNATE TUNER SCHEMATIC

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removal of the Channel Selector and Fine Tuning knobs. The adjustments are accessible, one at a time, through the small hole in the cabinet to the right of the Channel Selector shaft.

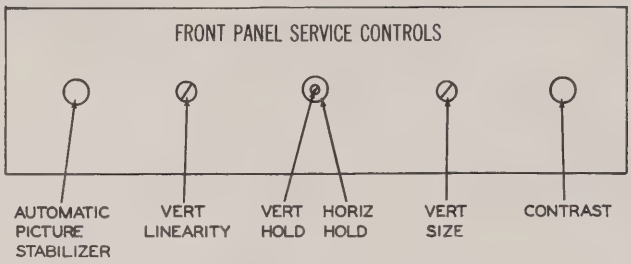
PICTURE TUBE SAFETY GLASS CLEANING

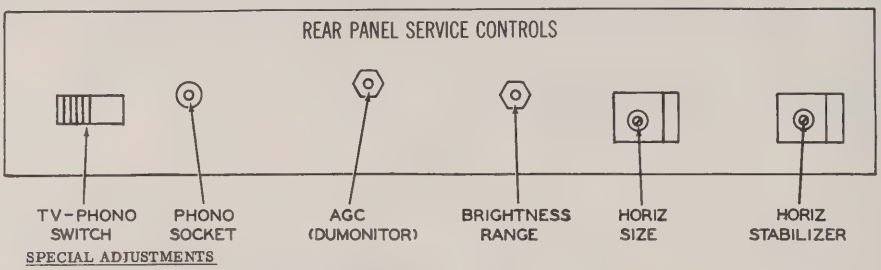
Remove 2 wood screws and 2 "ornamental washers" from top front of cabinet. Remove 2 bolts located behind washers. Remove safety glass and frame. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION





SPECIAL ADJUSTMENTS

PICTURE STABILIZER CONTROL ADJUSTMENT

Adjust for picture with stable sync. If adjusted too far clockwise, picture will have unstable sync.

DUMONITOR CONTROL ADJUSTMENT (AGC)

The Dumonitor (AGC) control is properly adjusted at the factory and will normally not require readjustment. To adjust the AGC control to prevent overloading on very strong signals the following procedure should be used.

1. Set horizontal hold control for maximum straightness of vertical elements of test pattern or picture, near the top of the picture.
2. Adjust AGC control until any overloading is eliminated.
3. Switch momentarily to another channel and back again.
4. If overloading reappears in step 3, readjust AGC control to correct this condition.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Adjustment of the Horizontal Osc. circuit can be made from the rear panel of the chassis. Set the horiz. hold control to its mid-range position and adjust (B1) Horiz. Osc. slug until the picture synchronizes horizontally.

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust L35 located on top of chassis. Adjust for minimum buzz and clearest sound.

FUSES

One fuse is used for Horiz. Sweep circuit protection. (For location see Tube Placement Chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push-on type control knobs and UHF dial from front panel.
2. Remove 7 wood screws. Remove rear cover.
3. Remove picture tube socket, HV lead, deflection yoke socket, speaker socket and lead from HV cage.
4. Remove 2 metal screws from antenna bracket.
5. Remove 5 chassis bolts. Remove chassis.
6. Remove 4 speaker nuts. Remove speaker

PICTURE TUBE REMOVAL

Remove chassis. Lay cabinet face down.

Remove 2 nuts from the 2 tube mounting straps.

Remove ion trap and deflection assembly.

Remove 2 bolts located on top and bottom of picture.tube front mounting band. Remove picture tube.

NOTE: If it is necessary to remove chassis for servicing, it is necessary to remove the speaker.

The output transformer is mounted on the speaker and must be connected for proper operation.

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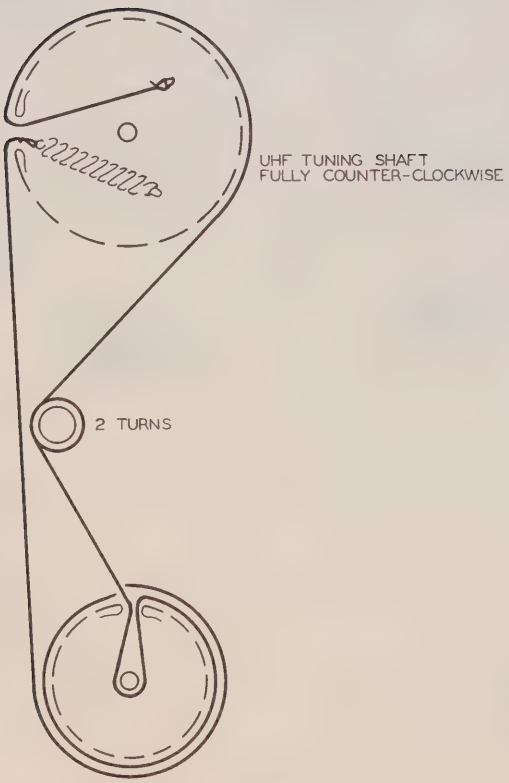

UHF DRIVE CORD STRINGING

PROPERTY OF
L. F. I. SHOP
3801
DENVER, COLORADO

VOLUME CONTROL ON-OFF SWITCH

TUNING

GENERAL ELECTRIC MODELS
427, 428, 429, 442, 443, 444

TRADE NAME	General Electric Models 427, 428, 429, 442, 443, 444
MANUFACTURER	General Electric Co., Electronics Dept., Electronics Park, Syracuse, N.Y.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
To set pointer, turn tuning capacitor fully closed and set pointer parallel with base of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 1 (grid) of 12BA6 (V2). Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	"	"	"	A3, A4	"
3.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	1500KC	Tune to 1500KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	RCE-200	PRS150/50-30		BBRD5315		TCD497	TVA-2450	Note 1
B	30	150								
C2	.05	200	UCC-045	P288-05	DF-503	CUB2S5		PT415	2TM-S5	
C3	47		RCW-3075							
C4A	400		RCW-3048	PA-100-4	D6-401	TP45	GP2K-401	UC-534	5GA-T4	
B	2000				DD-202	K072	811-002	DC-522	5HK-D2	
C	220				D6-221	TP39	GP2K-221	UC-5322	5GA-T22	
D	5000				DD-502	K080	811-005	DC-525	5HK-D5	
C5	.022	600	RCN-050	P688-022	DF-203	CUB6S22	817-02	PT6122	6TM-S22	
C6	.047	600	RCN-053	P688-047	DF-503	CUB6S47		PT6147	6TM-S47	
C7	.05	400	UCC-045	P488-05	DF-503	CUB4S5		PT415	4TM-S5	

Note 1. Some versions use 50MFD in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: General Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	RRC-290	Q11-137	A47F2-1Meg		UT-443	Volume - tapped @ 400KΩ
B	Shaft		Not Req.	Not Req.	KSS-3		Not Req.	Attach to R1A - Note
C	Switch		Not Req.	76-1	SWE-12		US-26	Attach to R1A

Note . Models 427, 428, 429 may use an alternate control part no. RRC-234.

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	22KΩ	½	URD-081	BTS-22K	
R3	100Ω	½	URD-025	BTS-100	Note 1
R4	68Ω	½	URD-021	BTS-68	Note 1
R5	2.2Meg	½	URD-129	BTS-2.2Meg	
R6	6.8Meg	½	URD-141	BTS-6.8Meg	

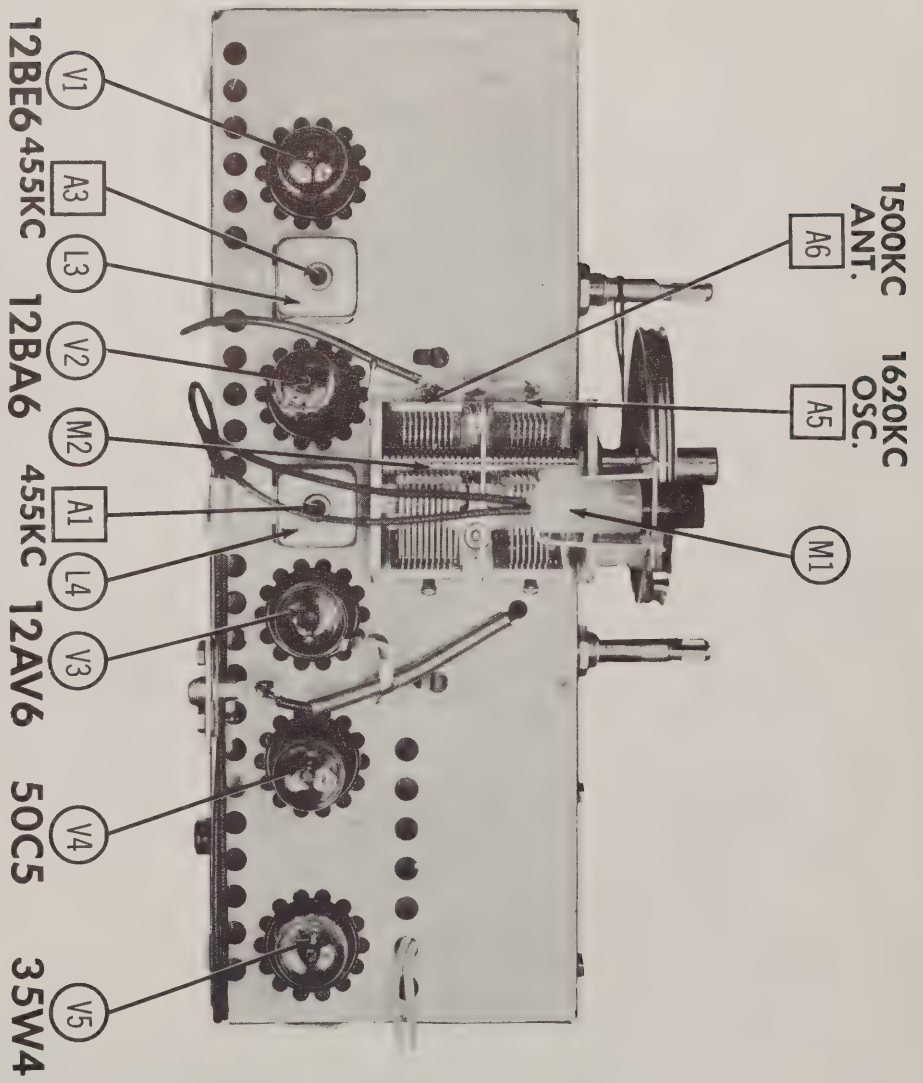
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: General Electric PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R7	470KΩ	½	URD-113	BTS-470K	
R8	470KΩ	½	URD-113	BTS-470K	
R9	150Ω	½	URD-029	BTS-150	
R10	1500Ω	2	URF-053	BTB-1500	
R11	18Ω	½	URD-007	BTS-18	

Note 1. Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: General Electric PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.6KΩ	3.8Ω	RTO-128	A-3332	A-3025	S-12X	Z1101	26S58	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	General Electric PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	3.8Ω	ROP-027	ST-113 (Mod. P4-X)	4A1	

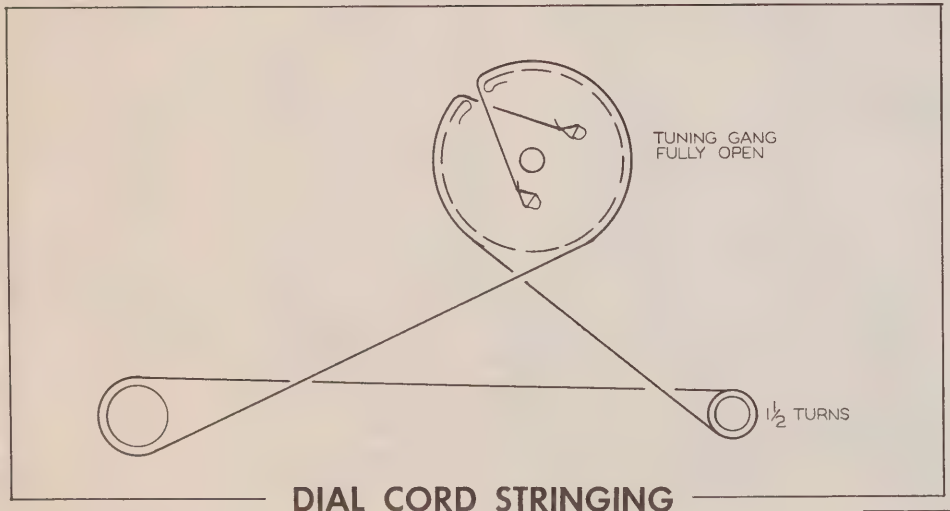
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	General Electric PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	.5Ω		RLL-055				Includes cabinet back
L2	Osc. Coil	.6Ω	6.5Ω	RLC-122	14-1074		70-OSC	
L3	Input IF	27Ω	27Ω	RTL-143	16-6758 *	BC-352 *	12-C1 *	
L4	Output IF	27Ω	27Ω	RTL-143	16-6758 *	BC-353 *	12-C2 *	

* Terminal connections have sufficient mounting support.

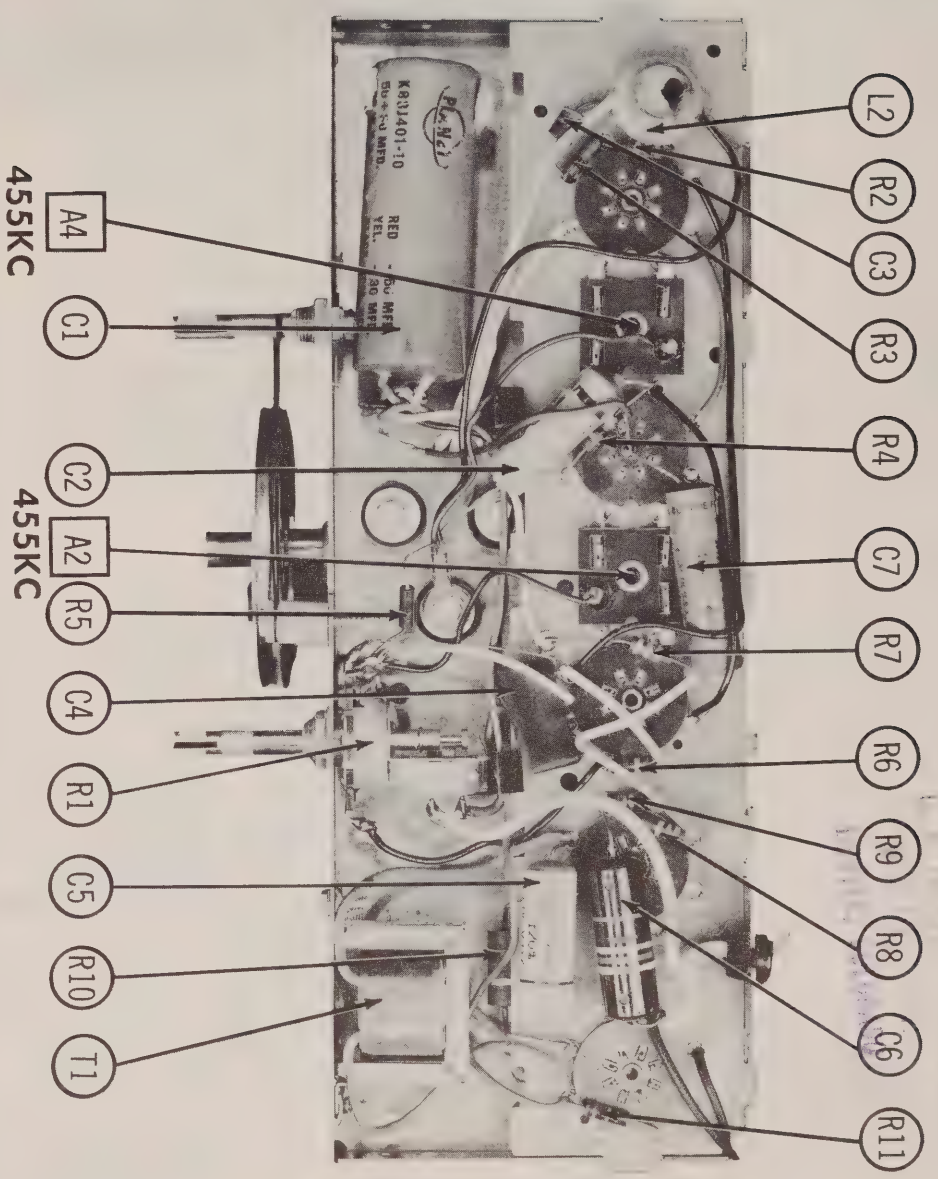
MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M1	Dial Light		#44, Bayonet
M2	Tuning Cap.	RCT-070	17-310MMF, 23-150MMF
	Cabinet	RAU-385	Models 427, 442
	Cabinet	RAU-386	Models 428, 443
	Cabinet	RAU-387	Models 429, 444
	Knob	RDK-354	On-off-Radio & Phono volume
	Knob	RDK-294	Tuning
	Dial Pointer	RDP-077	Models 427, 428, 429
	Dial Pointer	RDP-082	Models 442, 443, 444
	Dial Scale & Window	RDW-072	Models 427, 428, 429
	Dial Scale & Window	RDW-076	Models 442, 443, 444
	Medallion	RYN-017	

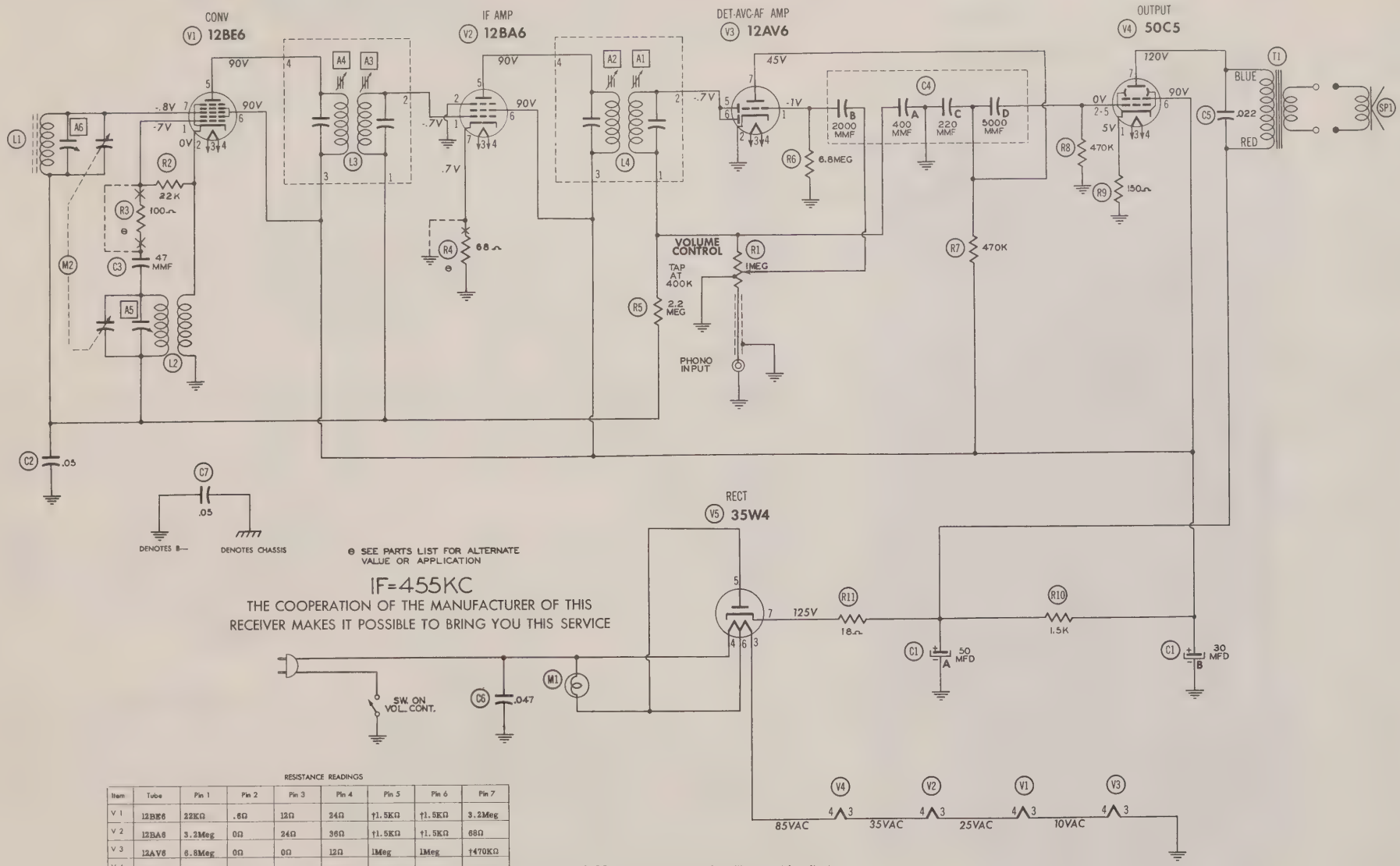


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC MODEL 427



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	68Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	1Meg	1Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	85Ω	470KΩ	†1.5KΩ	†230Ω
V 5	35W4	†18Ω	†18Ω	85Ω	117Ω	110Ω	110Ω	110KΩ

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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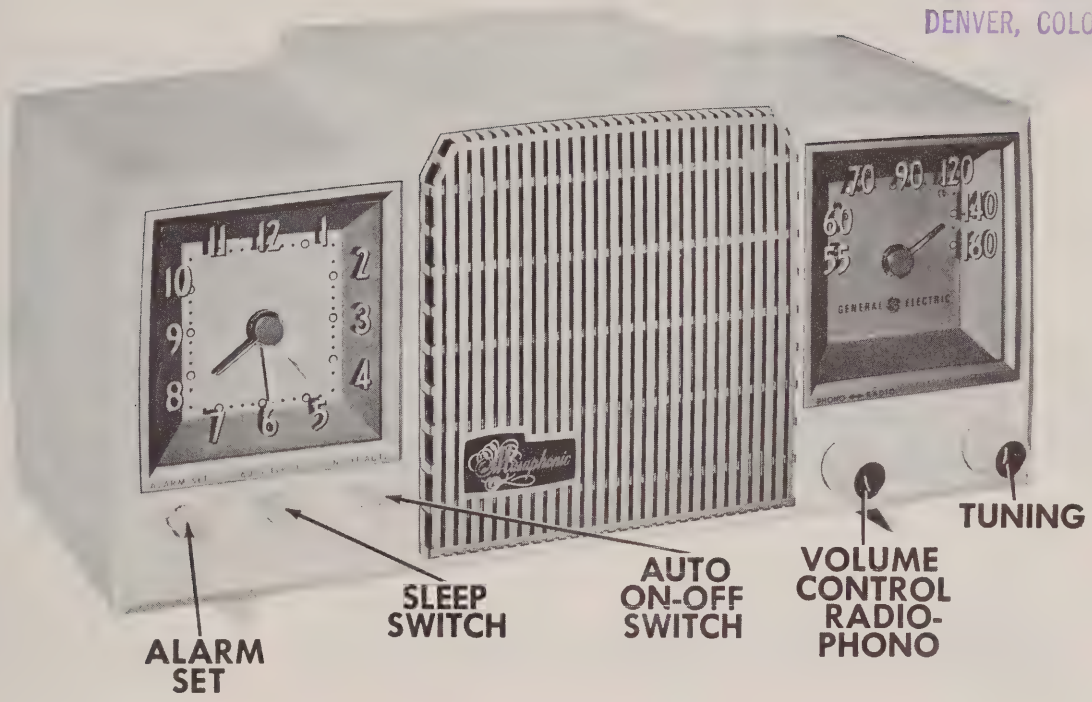
DENVER, COLORADO

GENERAL ELECTRIC
MODELS 580, 581, 582



GENERAL ELECTRIC
MODELS 580, 581, 582

TRADE NAME	General Electric Models 580, 581, 582
MANUFACTURER	General Electric Corp., Electronics Dept., Electronics Park, Syracuse, N. Y.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC - 60 Cycles — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535KC - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05MFD	High side to pin 1 (grid) of 12BA6 (V2). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2	"	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	"	"	"	A3, A4	"
3		Loop	1600KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1500KC	Tune to 1500KC signal.	"	A6	Adjust for maximum output while rocking tuning gang thru 1500KC signal.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		General Electric PART No.	STANDARD REPLACEMENT		
V1	Conv.	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	General Electric PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	100	150	RCE-166	PRS150/80-40-20		XC003		TCT3117	TVA-3455	Red
B	50	150								Yellow
C2	.05	400	UCC-045	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C3	47		RCW-3075							
C4	220		RCW-3137	BPD-00022	DD-221		GP1K-221	UC-5322	5GA-T22	
C5	.02	400	RCC-129	P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C6	220		RCW-3137	BPD-00022	DD-221		GP1K-221	UC-5322	5GA-T22	
C7	.02	400	RCC-129	P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C8A	500				D6-501		GP2L-501	UC-535	5GA-T5	
B	6800		RCW-3104	PA-315	D6-682		GP2-333-682	UC-5268	5GA-T68	
C9	.05	200	RCC-126	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C10	.047	600	RCN-053	689ZX-047	DF-503	PJ6S47		PT6147	6TM-S47	
C11	.05	400	UCC-045	P488-05	DF-503	CUB4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	General Electric PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	4Meg	½	RRC-278					Volume & switch tapped at 2Meg

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R2	22KΩ	½		BTS-22K	
R3	100Ω	½		BTS-100	
R4	68Ω	½		BTS-68	
R5	330KΩ	½		BTS-330K	
R6	2.2Meg	½		BTS-2.2Meg	
R7	6.8Meg	½		BTS-6.8Meg	
R8	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	General Electric PART No.	IRC PART No.	
R9	470KΩ	½		BTS-470K	
R10	150Ω	½		BTS-150	
R11	1500Ω	1		BTA-1500	
R12	4700Ω	1½		BTS-4700	
R13	820Ω	½		BTS-820	
R14	15KΩ	½		BTS-15K	

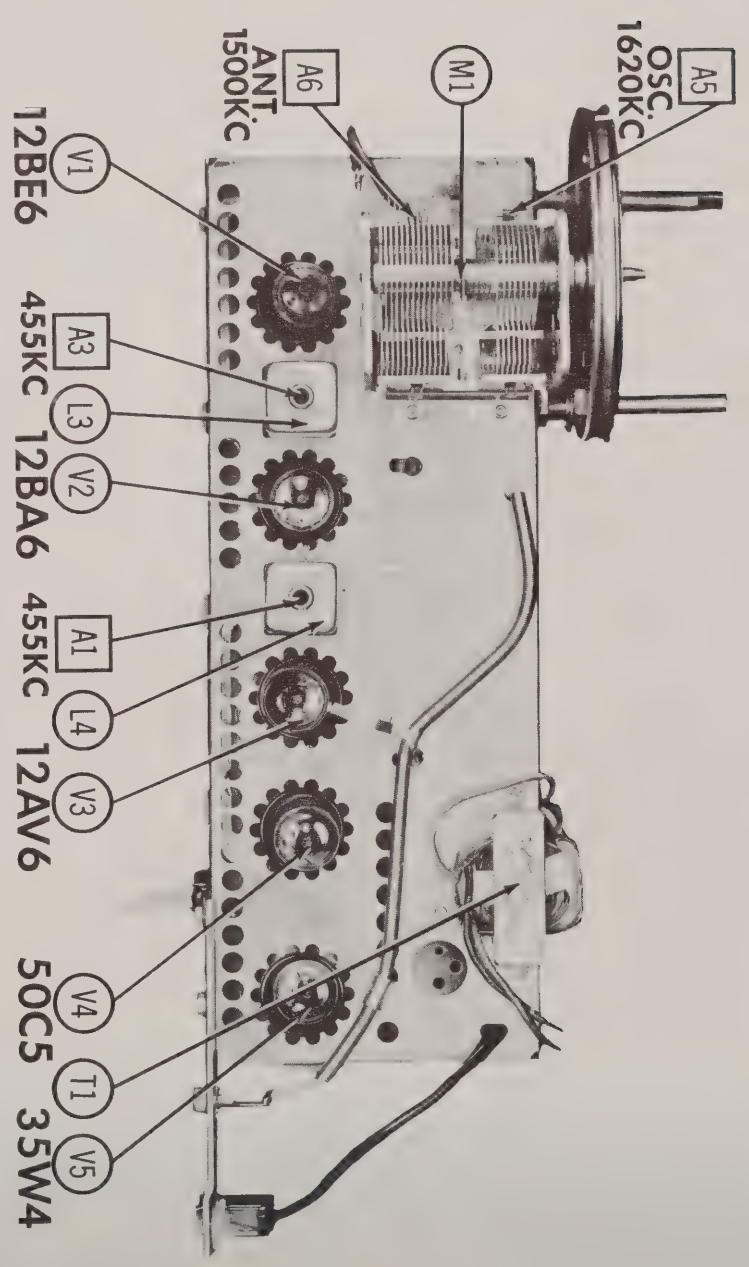
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	General Electric PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	63.4Ω SEC. 2 3.4Ω	RTD-157						

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	General Electric PART No.	JENSEN PART No.	QUAM PART No.	
SP1	5 1/4"	PM	3.4Ω	R0P-030	ST-803 Mod. P525-V	52A1	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

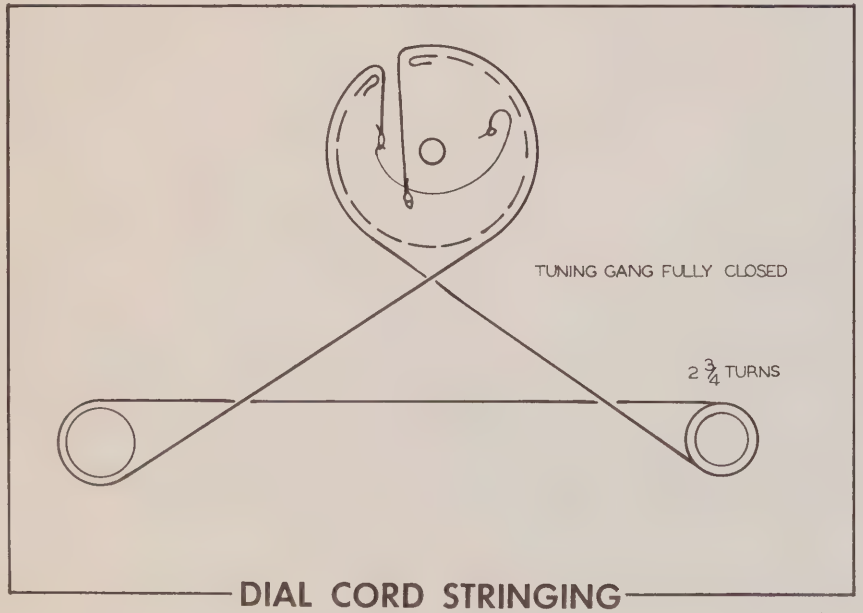
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	General Electric PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.1Ω		RAB-245				Includes cabinet back.
L2	Osc. Coil	.5Ω	7Ω	RLC-122	14-1074		70-Osc.	
L3	Input IF	14Ω	14Ω	RTL-143	16-6758*	BC-352*	12-C1*	
L4	Output IF	13Ω	13Ω	RTL-143	16-6758*	BC-353*	12-C2*	

* Terminal connections have sufficient mounting support.

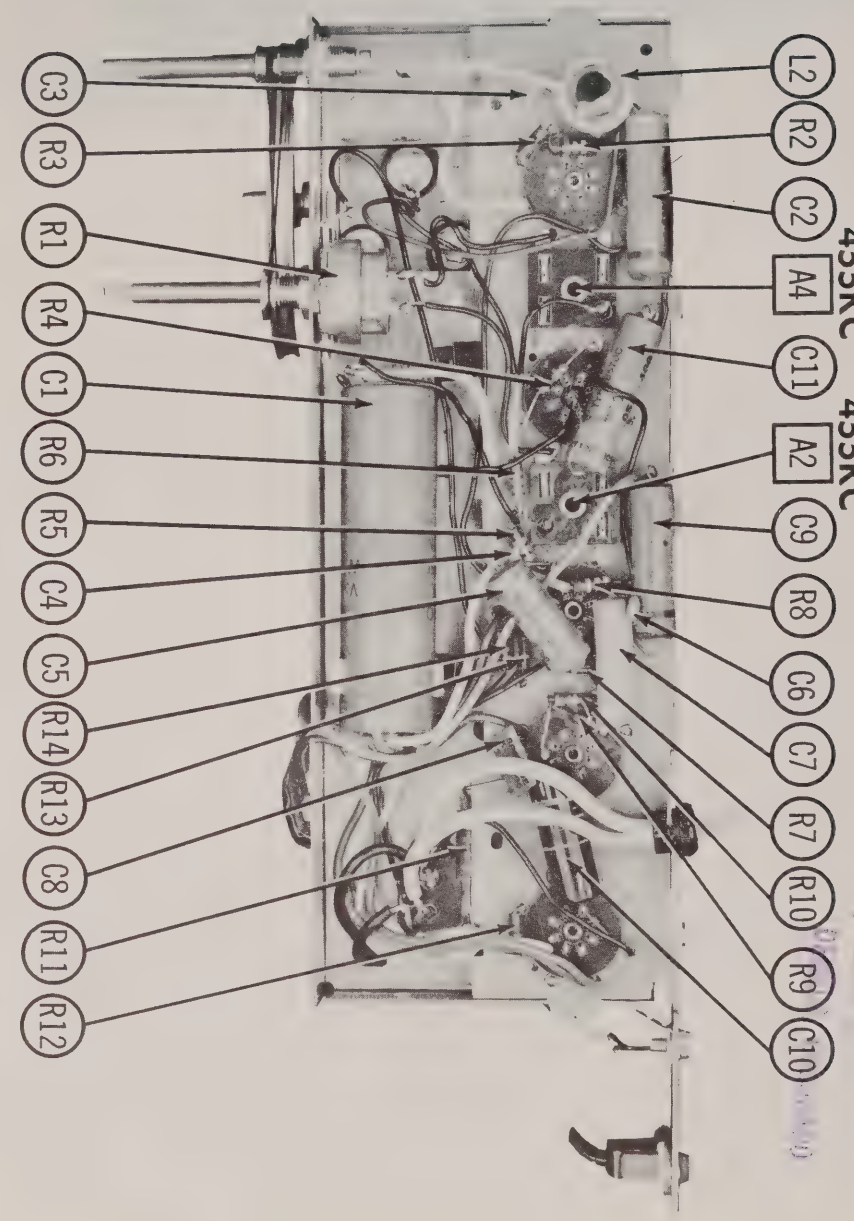
MISCELLANEOUS

ITEM No.	PART NAME	General Electric PART No.	NOTES
M1	Tuning Cap.	RCT-079	23-470MMF; 23-150MMF.
M2A	Clock Assembly	RZC-039	Green Face - Model 582
B	Clock Assembly	RZC-040	Gold Face - Models 580 & 581
	Cabinet	RAU-418	Model 582
	Cabinet	RAU-419	Model 580
	Cabinet	RAU-420	Model 581
	Knob	RZK-017	Clock - Models 582 and 581
	Knob	RZK-024	Clock - Model 580
	Dial Pointer	RDP-084	Model 581
	Dial Pointer	RDP-085	Models 580 & 582
	Dial Scale	RDS-129	Less Numerals - Models 580 & 581
	Dial Scale	RDS-130	Less Numerals - Model 582
	Crystal	RDW-079	Radio Dial with Numerals
	Crystal	RZW-015	Clock with Numerals
	Medallion	RYN-019	

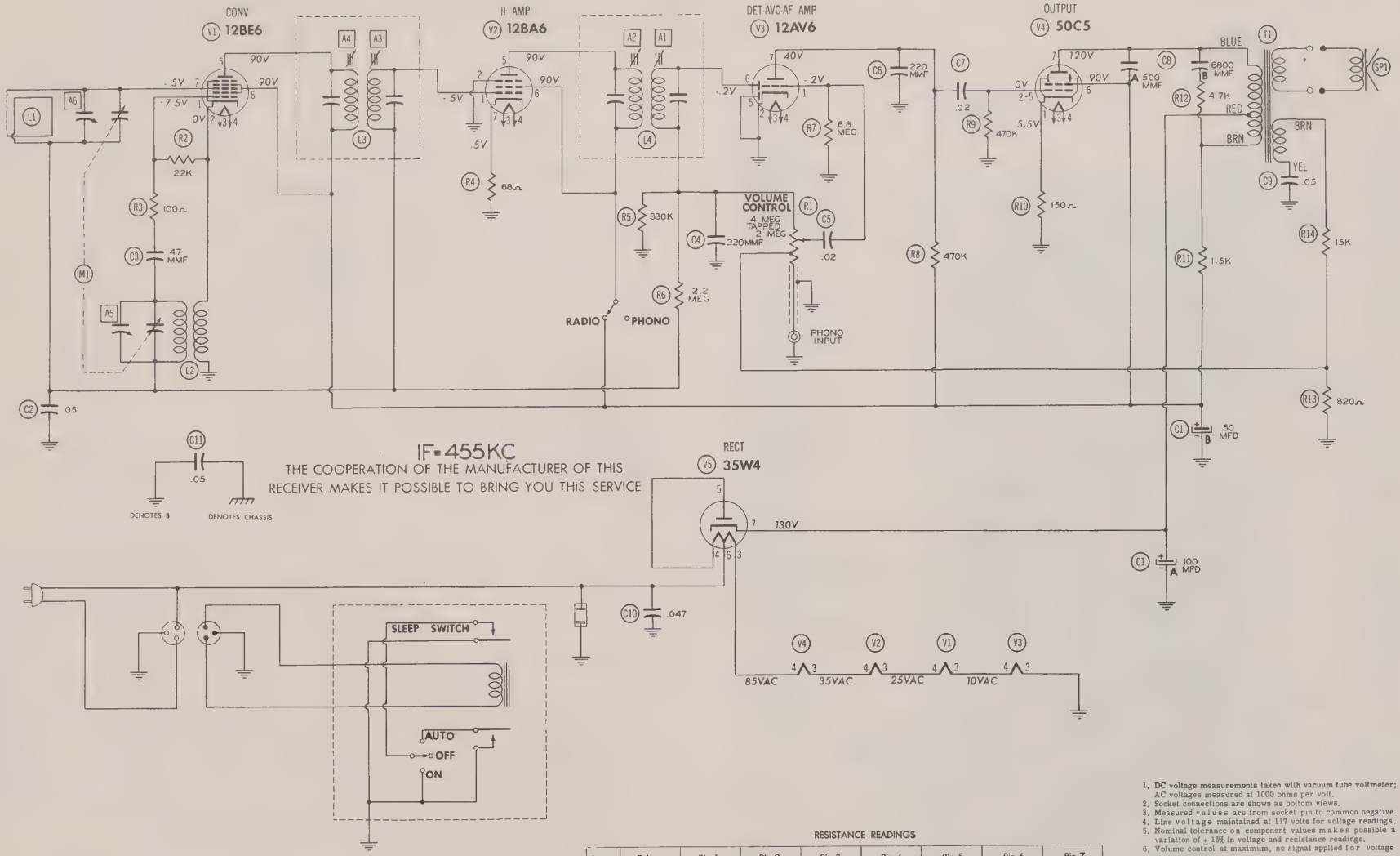


DIAL CORD STRINGING

CHASSIS—BOTTOM VIEW



GENERAL ELECTRIC MODEL 580



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	12Ω	24Ω	†1.5KΩ	†1.5KΩ	2.5Meg
V 2	12BA6	2.5Meg	0Ω	24Ω	36Ω	†1.5KΩ	†1.5KΩ	68Ω
V 3	12AV6	6.8Meg	0Ω	0Ω	12Ω	0Ω	330KΩ	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†1.5KΩ	†260Ω
V 5	35W4	†15Ω	†4.7KΩ	86Ω	120Ω	120Ω	110Ω	110KΩ

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MAJESTIC
MODEL 4L1

MAJESTIC
MODEL 4L1

TRADE NAME	Majestic Model 4L1
MANUFACTURER	Majestic Radio & Television, Div. of Wilcox-Gay Corp., 70 Washington St., Brooklyn, N. Y.
TYPE SET	Battery Operated Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det-AVC-AF Amp., 3V4 Output
POWER SUPPLY	1.5 Volts "A" Supply & 75 Volts "B" Supply
RATING	250MA @ 1.5 Volts DC & 10.5MA @ 75 Volts DC
TUNING RANGE	BROADCAST 540KC - 1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1	.01MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2	"	"	1650KC	"	"	A5	"
3	Direct	Loop	1500KC	Tune to 1500KC signal.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

MAJESTIC MODEL 4L1

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MAJESTIC PART No.	STANDARD REPLACEMENT		
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MAJESTIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	8	100	B-5 444①	PRS150/8		BR815		TC41	TVA-1405	
C2	.02	400		P488-02	DF-203	CUB4S2		PT412	4TM-S2	
C3	47			SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C4	.02	200		P288-02	DF-203	PJ2S2		PT412	2TM-S2	
C5	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C6	.001	200		P288-001	D6-102	PJ2D1	GP2L-102	PT421	2TM-D1	
C7	100		②	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C8	.01	400	②	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C9	.005	600	②	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C10	.001	600		P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	

① Alternate part no. B-5.417
② Some versions combine C7, C8, C9, R6, R7, and R8 in one unit (part no. B-10.205).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1	1Meg	½	C-8.233B					Volume & Switch

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MAJESTIC PART No.	IRC PART No.	
R2	100KΩ 5%	½		BTS-100K 5%	
R3	6800Ω	½		BTS-6800	Note 1
R4	3.3Meg	½		BTS-3.3Meg	Note 2
R5	8.2Meg	½		BTS-8.2Meg	Note 3

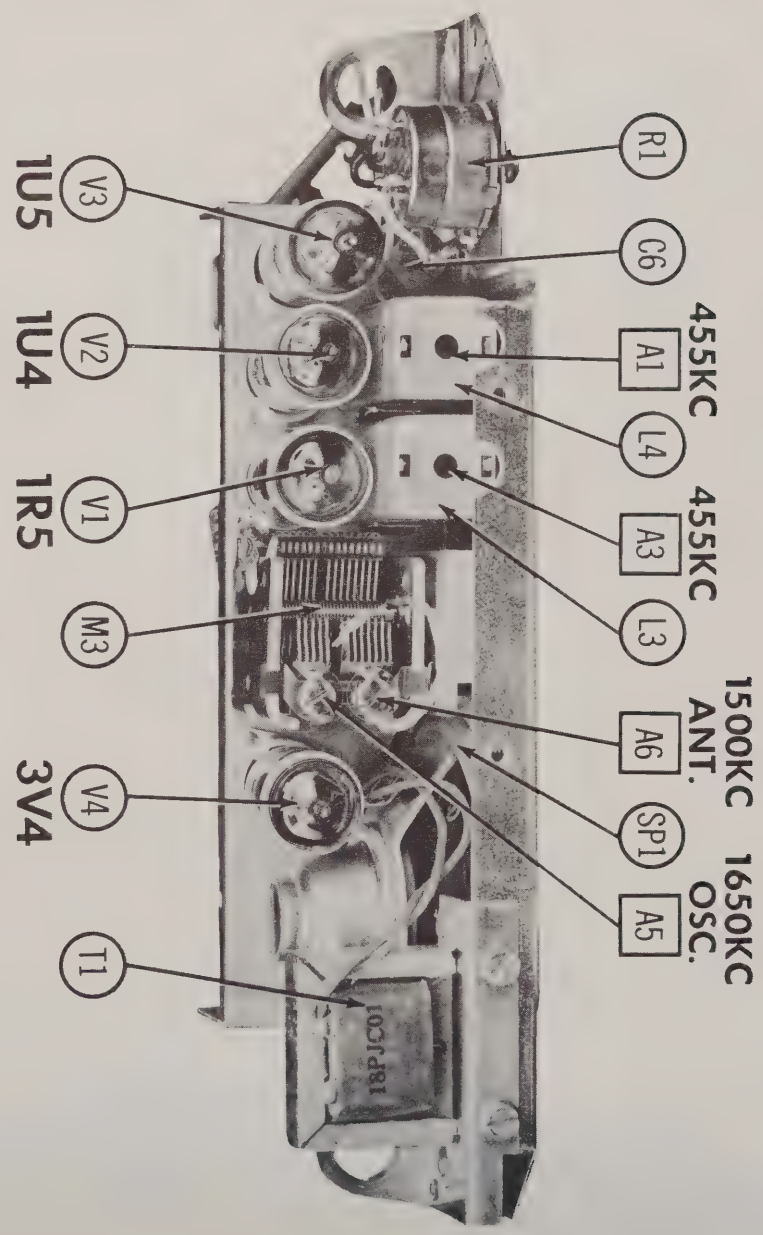
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MAJESTIC PART No.	IRC PART No.	
R6	4.7Meg	½		BTS-4.7Meg	Note 5
R7	1Meg	1		BTA-1Meg	Note 5
R8	2.7Meg	½		BTS-2.7Meg	Notes 4, 5
R9	470Ω	½		BTS-470	

Note 1: Some versions may use a 4700Ω resistor in this application.
Note 2: Some versions may use a 4.7Meg resistor in this application.
Note 3: Some versions may use a 10Meg resistor in this application.
Note 4: Some versions may use a 2.2Meg resistor in this application.
Note 5: Some versions combined R6, R7, R8, C7, C8 and C9 in one unit (part no. B-10.205)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MAJESTIC PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	9.6KΩ	3.3Ω	C-9.380-1A	A-3329	A-2998	S-11X		24S49	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MAJESTIC PART No.	VIKING PART No.	QUAM PART No.	
SP1	$3\frac{1}{2}$"	PM	3. 3Ω	C-30. 339A C-30. 446 ①	35J6	3A07	① Alternate PM speaker.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MAJESTIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1. 1Ω		C-1. 600				
L2	Osc. Coil	1. 5Ω	8Ω	C-1. 601	14-1074	BC-394	70-Osc.	
L3	Input IF	17Ω	17Ω	C-1. 445-5	16-6758	BC-352	12-C1	
L4	Output IF	18Ω	18Ω	C-1. 445-5	16-6758	BC-353	12-C2	

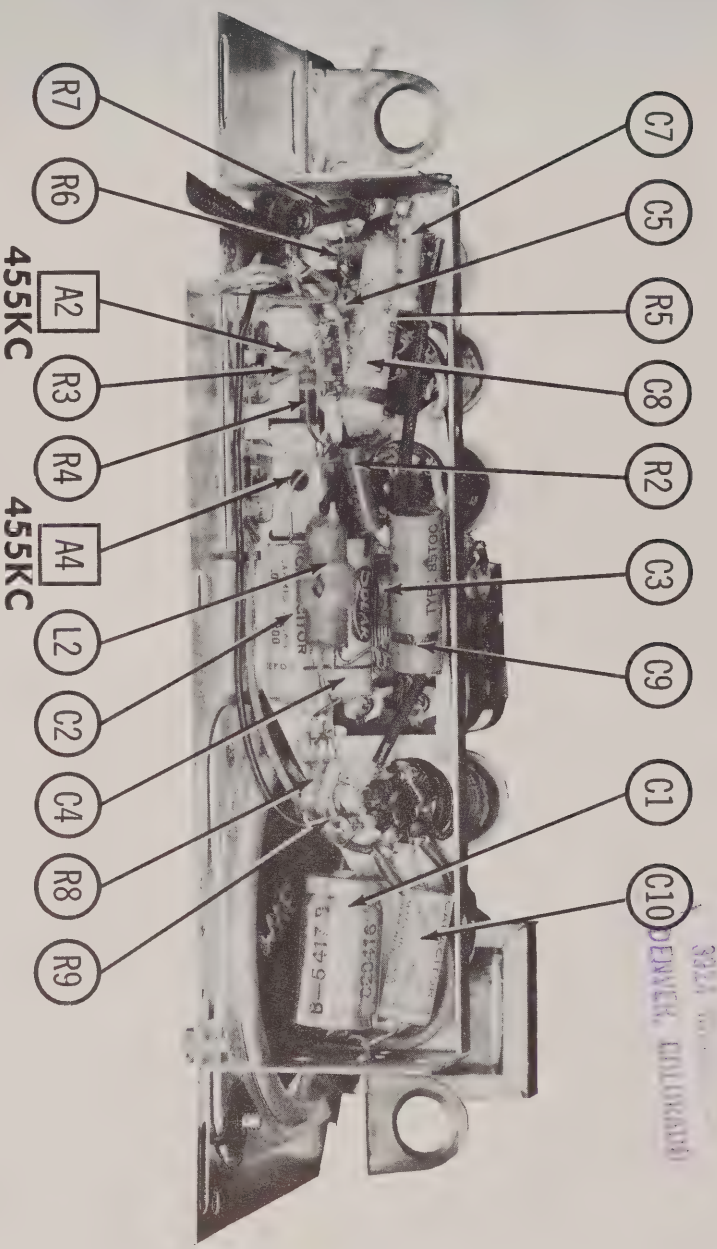
BATTERIES

ITEM No.	VOLTAGE	MAJESTIC PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M1 M2	1. 5V "A" 75V "B"		964	437		21R	XX50		Connect 2 in parallel

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
M3	Tuning Cap.	C-2. 227	2 Gang (8-185MMF; 10-110MMF.)

CHASSIS—BOTTOM VIEW



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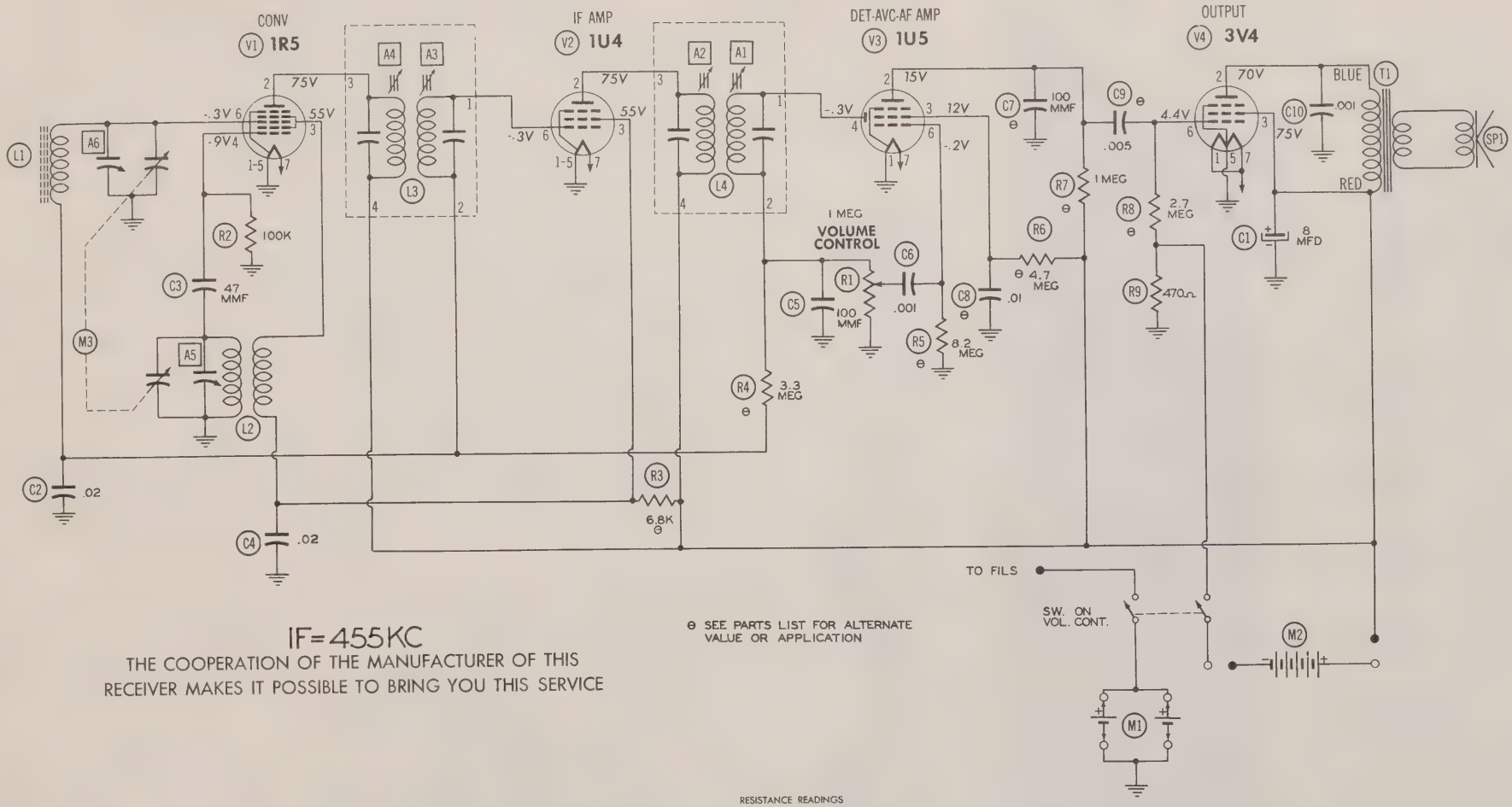

IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†17Ω	†6.8KΩ	100KΩ	*	4.3Meg	*
V 2	1U4	*	†18Ω	†6.8KΩ	INF	*	4.3Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	1Meg	INF	8.2Meg	*
V 4	3V4	*	†526Ω	†0Ω	470Ω	*	2.7Meg	*

* DO NOT MEASURE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM B+ BATTERY TERMINAL

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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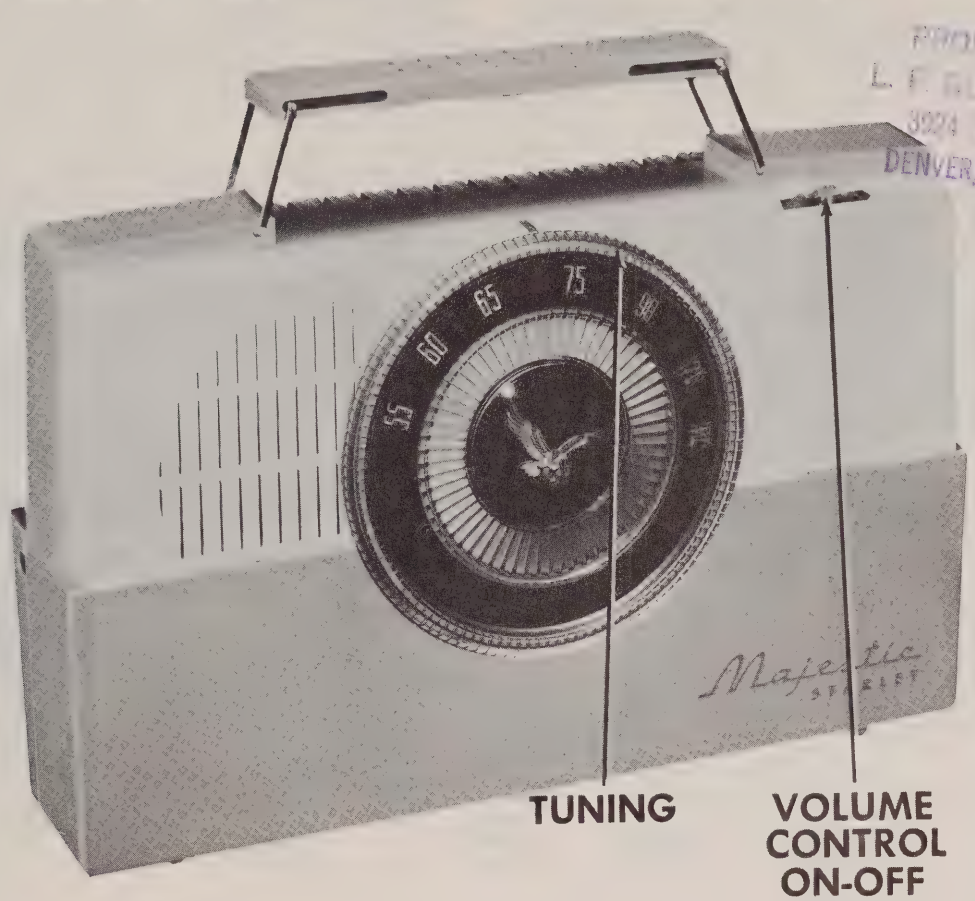

MAJESTIC
MODEL 5M1

TRADE NAME	Majestic Model 5M1
MANUFACTURER	Majestic Radio & Television, Div. of Wilcox-Gay Corp., 70 Washington St., Brooklyn, N. Y.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det-AVC-AF Amp., 3V4 Output
POWER SUPPLY	105-120 Volts AC-DC (or) 1.5 Volts "A" Supply & 67.5 Volts "B" Supply
RATING	.10 Amp. @ 117 Volts AC (or) 250MA @ 1.5 Volts DC & 9.5MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540KC - 1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01MFD	High side to antenna stator terminal lug. Low side to chassis.	455KC (400~ Mod)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2		Loop	1650KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		Loop	1500KC	Tune to 1500KC signal.	"	A6	"

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PARTS LIST AND DESCRIPTIONS

MAJESTIC MODEL 5M1

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amp.	1U4	1U4	6AR	
V3	Det-AVC-AF Amp.	1U5	1U5	6BW	
V4	Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	80	150				BBRT8215				
B	30	150				C10				
C	150	6								
C2	.02	200		P288-02	DF-203	PJ2S2		PT412	2TM-S2	
C3	47			SI47	D6-470	TP29	GP1K-47	UC-5447	5GA-Q47	
C4	.02	100		P288-02	DF-203	PJ2S2		PT412	2TM-S2	
C5	100			SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C6	.001	600		P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C7A	100									
B	5000			♦PA-117-1	♦PC-91	♦114TM2	♦1407-03		♦P-2	
C	5000									
C8	.001	200		P288-001	D6-102	PJ2D1	GP2L-102	PT421	2TM-D1	
C9	.1	200		P288-1	DF-104	CUB4P1		PT401	4TM-P1	
C10	.047	400		489ZX-05	DF-503	CUB4S5		PT415	4TM-S5	
C11	.05	400		489ZX-05	DF-503	CUB4S5		PT415	4TM-S5	

♦ Items C7A, C7B, C7C, R6A, R6B and R6C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1Meg	½	C-8.233B					Volume & Switch

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	NOTES
R2	100KΩ	½		BTS-100K	
R3	6800Ω	½		BTS-6800	Note 4
R4	3.3Meg	½		BTS-3.3Meg	Note 1
R5	10Meg	½		BTS-10Meg	
R6A	4.7Meg	½	♦	BTS-4.7Meg	
B	1Meg	½	♦	BTS-1Meg	
C	2.2Meg	½	♦	BTS-2.2Meg	
R7	270Ω	½		BTS-270	

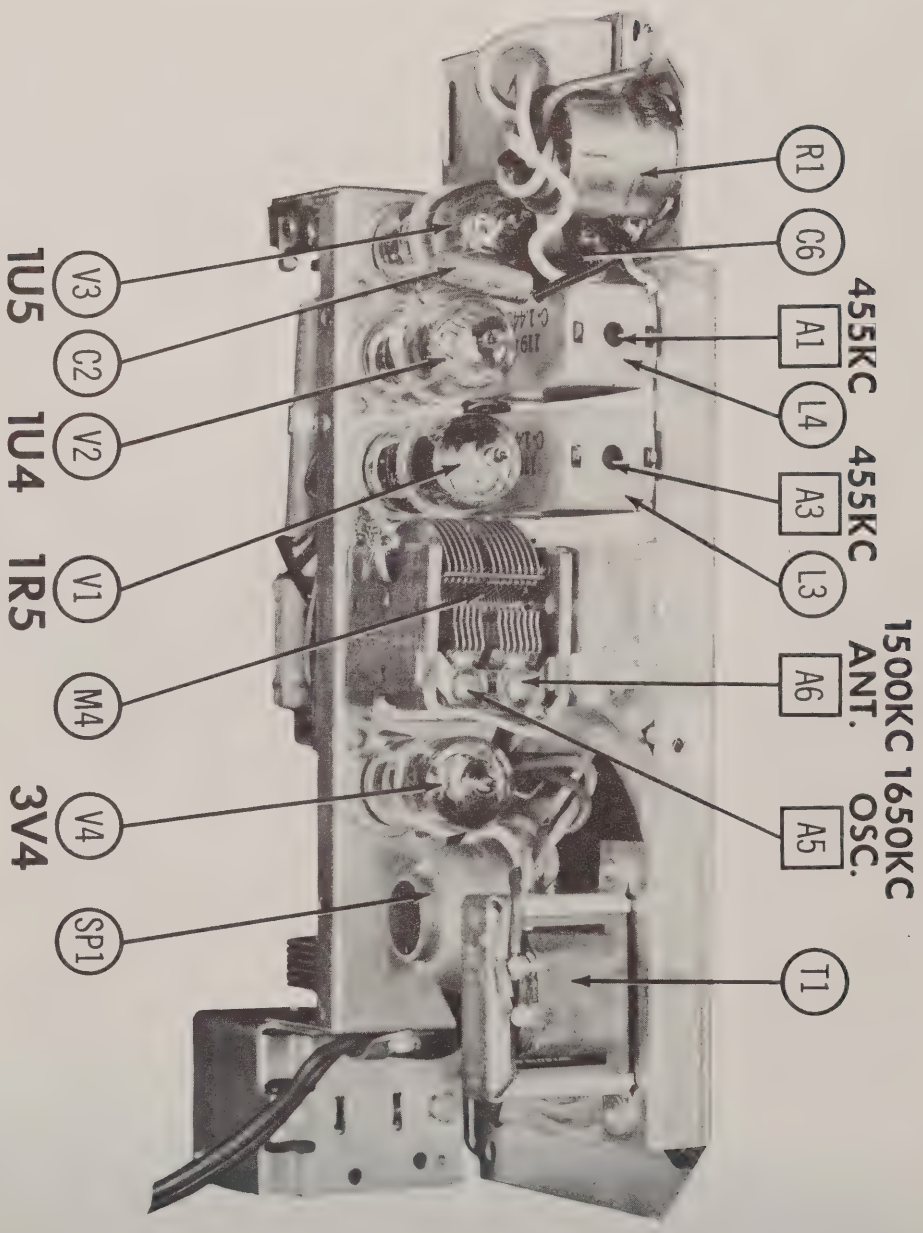
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	NOTES
R8	3300Ω	1		BTA-3300	
R9	100Ω	1		BTA-100	
R10	2200Ω	10			
R11	560Ω	½		BTS-560	
R12	1500Ω	½		BTS-1500	Note 2
R13	470Ω	½		BTS-470	
R14	220KΩ	½		BTS-220K	Note 3

♦ Items R6A, R6B, R6C, C7A, C7B and C7C are combined in one unit.
Note 1: Some versions may use a 4.7Meg resistor in this application.
Note 2: Some versions may use a 1200Ω resistor in this application.
Note 3: Not used in some versions.
Note 4: Some versions may use a 4700Ω resistor in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: MAJESTIC PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	9.6KΩ	3.3Ω	C-9.380-1A	A-3329	A-2998	S-11X		24S49	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MAJESTIC PART No.	VIKING PART No.	QUAM PART No.	
SP1	3½"	PM	3.3Ω	C-30.339A C-30.446 ①	35J6	3A07	① Alternate PM speaker

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MAJESTIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Ant. Coil	1.1Ω		C-L 600				
L2	Osc. Coil	1.4Ω	8Ω	C-L 601	14-1074		70-Osc.	
L3	Input IF	18Ω	18Ω	C-L 445-5	16-6758	BC-352	12-C1	
L4	Output IF	18Ω	18Ω	C-L 445-5	16-6758	BC-353	12-C2	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	MAJESTIC PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.061A	C-39.206	1003A	RS75	6S75	5M4	75	

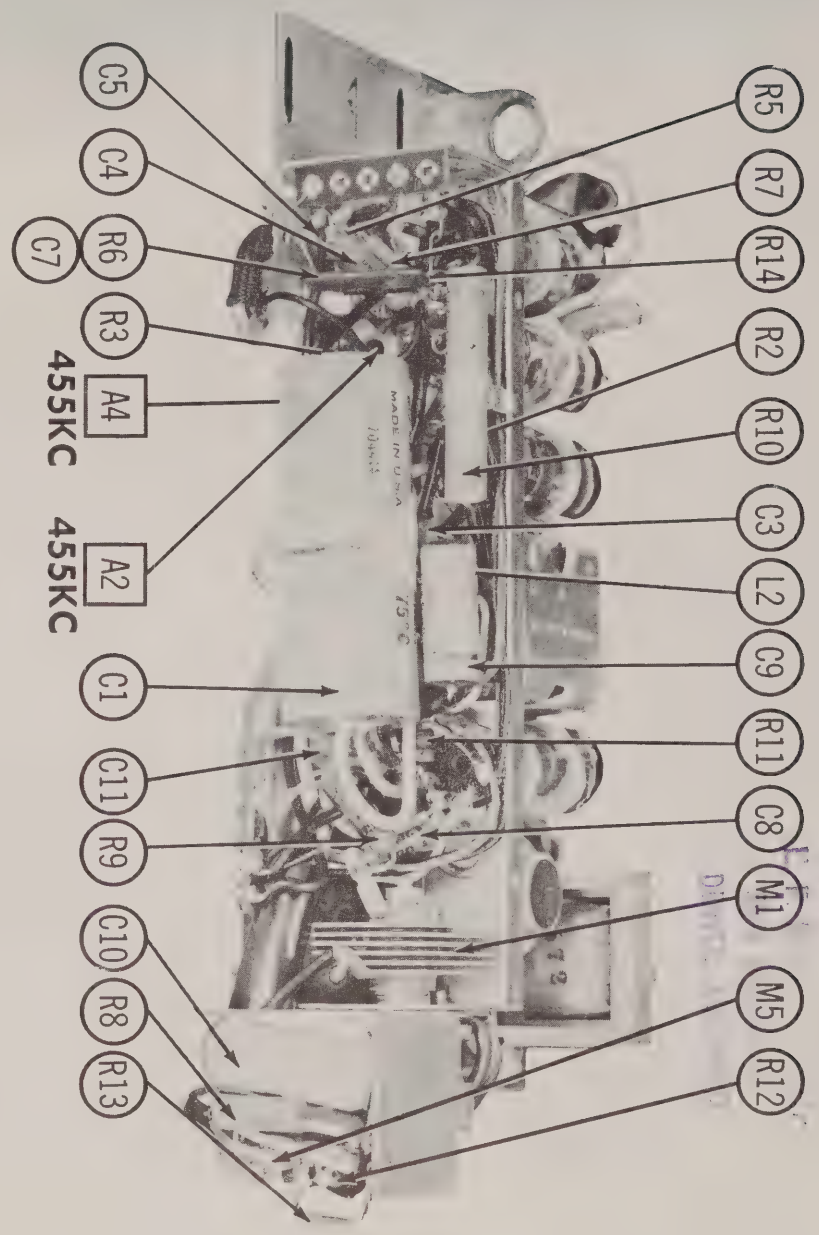
BATTERIES

ITEM No.	VOLTAGE	MAJESTIC PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	1.5V "A"		964			21R			
M3	67.5V "B"			477			P45		

MISCELLANEOUS

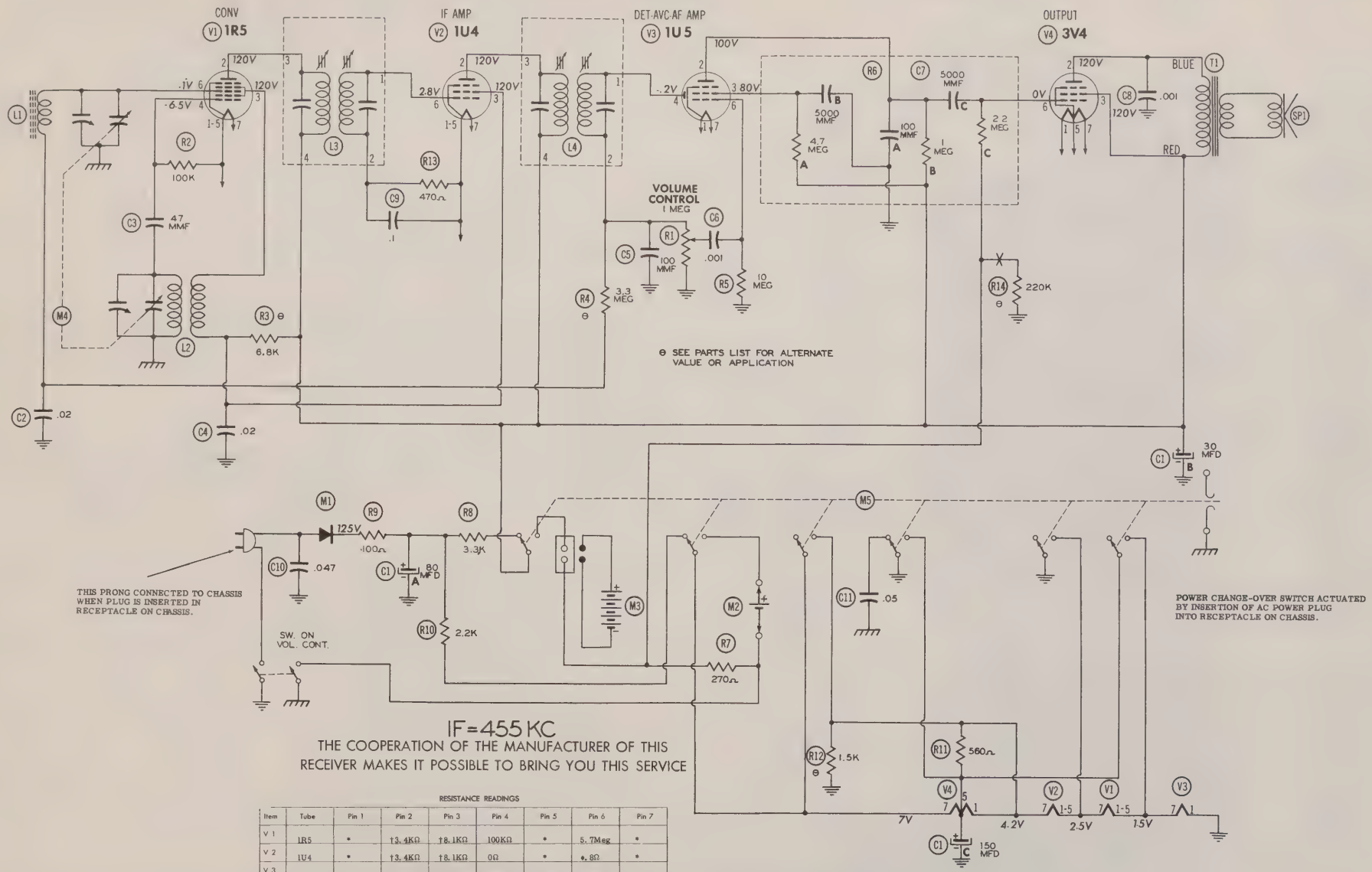
ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
M4	Tuning Cap.	C-2.227	8-185MMF; 10-110MMF.
M5	Switch	C-11.334	Changeover

CHASSIS—BOTTOM VIEW



MAJESTIC MODEL 5M1

MAJESTIC MODEL 5M1


CONV
V1 1R5
IF AMP
V2 1U4
DET-AVC-AF AMP
V3 1U5
OUTPUT
V4 3V4
VOLUME CONTROL 1 MEG
θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
THIS PRONG CONNECTED TO CHASSIS WHEN PLUG IS INSERTED IN RECEPTACLE ON CHASSIS.
SW. ON VOL. CONT.
POWER CHANGE-OVER SWITCH ACTUATED BY INSERTION OF AC POWER PLUG INTO RECEPTACLE ON CHASSIS.
BLUE
RED

IF=455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†3.4KΩ	†8.1KΩ	100KΩ	*	5.7Meg	*
V 2	1U4	*	†3.4KΩ	†8.1KΩ	0Ω	*	♦.8Ω	*
V 3	1U5	*	†1Meg	†4.7Meg	1Meg	0Ω	10Meg	*
V 4	3V4	*	†3.6KΩ	†3.4KΩ	0Ω	*	2.2Meg	*

* DO NOT MEASURE OHMMETER TO MEASURE FILAMENT RESISTANCE.
† MEASURED FROM OUTPUT OF M1.
♦ MEASURED FROM PINS 1 & 5 OF V2.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MASCO
MODEL ME-27, ME-27P-3

DENVER, COLORADO

MASCO
MODEL ME-27, ME-27P-3

MASCO
MODEL ME-27, ME-27P-3

TRADE NAME	Masco Models ME-27, ME-27P-3 (Revised)
MANUFACTURER	Mark Simpson Mfg., Co., Inc., 32-28 49th. St., Long Island City 3, N.Y.
TYPE SET	AC Operated 3 Channel 27 Watt Audio Amplifier (Model ME-27P-3 has Phono Included)
TUBES (Six)	Types 6SC7 Pre-Amp., 6SJ7 AF Amp., 6SC7 AF Amp.-Phase Inv., (2) 6L6G Output, 5V4G Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .82 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

MASCO
MODEL ME-27

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		MASCO PART No.	STANDARD REPLACEMENT		
V1	Pre-Amplifier	6SC7	6SC7	8S	
V2	AF Amplifier	6SJ7	6SJ7	8N	
V3	AF Amp.-Phase Inverter	6SC7	6SC7	8S	
V4	Output	6L6G	6L6G	7S	
V5	Output	6L6G	6L6G	7S	
V6	Rectifier	5V4G	5V4G	5L	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	MASCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1	16	450		PRS450/16		BR1645		TC74	TVA-1708	
C2A	▲10	450		AFH4-10		D009		FP434	TVL-4760	
B	■10	450								
C	▲10	450						TC32	TVA-1304	
C3	10	50		PRS50/10		BR105				
C4	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C5	.005	600		P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C6	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C7	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C8	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C9	.01	600		P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C10	.02	600		P688-02	DF-203	CUB6S2	817-02	PT612	6TM-S2	
C11	.02	600		P688-02	DF-203	CUB6S2	817-02	PT612	6TM-S2	
C12	.1	600		P688-1	DF-104	CUB6P1		PT601	6TM-P1	

CONTROLS

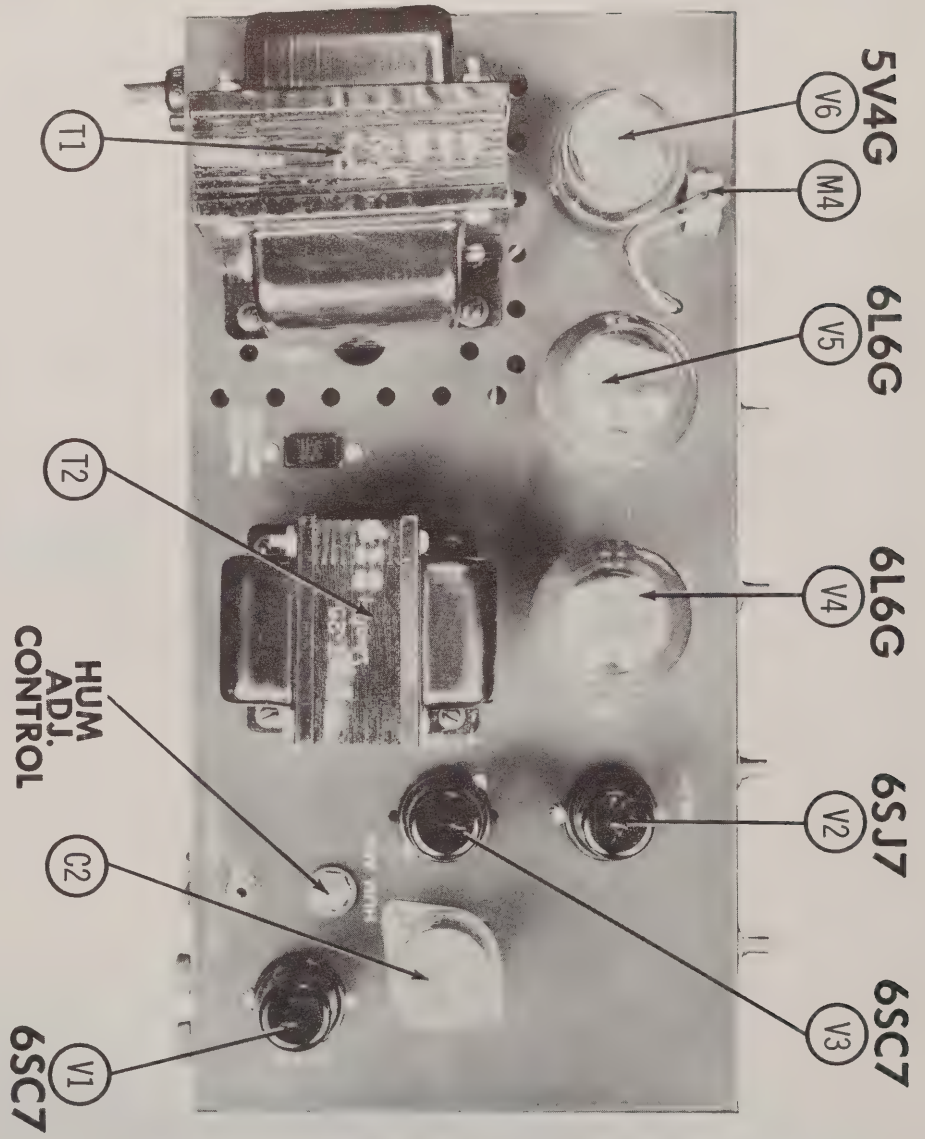
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	6163925	Q13-133	A47-500K-Z	B-60-S	U-48	Tone
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	Not Req.	US-26	Attach to R1A
R2A	500KΩ	½	6153926	Q13-133	A47-500K-Z	B-60	U-48	Phono
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R2A
R3A	500KΩ	½	6153926	Q13-133	A47-500K-Z	B-60	U-48	Mic #2
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R3A
R4A	500KΩ	½	6153926	Q13-133	A47-500K-Z	B-60	U-48	Mic #1
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Not Req.	Attach to R4A
R5A	50Ω	2		W-50	A43-50	VK116	C50P	Hum Adj.
B	Shaft			Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R5A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R6	5.6Meg	½		BTS-5.6Meg	
R7	270KΩ	½		BTS-270K	
R8	5.6Meg	½		BTS-5.6Meg	
R9	270KΩ	½		BTS-270K	
R10	270KΩ	½		BTS-270K	
R11	270KΩ	½		BTS-270K	
R12	1Meg	½		BTS-1Meg	
R13	1000Ω	½		BTS-1000	
R14	47KΩ	½		BTS-47K	
R15	1000Ω	½		BTS-1000	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	MASCO PART No.	IRC PART No.	
R16	47KΩ	½		BTS-47K	
R17	12KΩ	½		BTS-12K	
R18	47KΩ	½		BTS-47K	
R19	270KΩ	½		BTS-270K	
R20	200Ω	5			
R21	270KΩ	½		BTS-270K	
R22	5000Ω	5			
R23	12KΩ	½		BTS-12K	
R24	12KΩ	½		BTS-12K	
R25	200Ω	5			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ .82A	680VCT .118ADC	5VAC @ 3A	6.3VAC @ 3A	P-25	PC-8410 ① ②	P-3173 ①	R-14A ① ②	P9314 ① ②	24R05U ① ②

① Drill new mounting holes.
② Tape 6.3V center tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MASCO PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	5.9KΩ	500Ω tap @ 250Ω, 70V, 15Ω, 8Ω, 4Ω	T-25						

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MASCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	2A - 250V			312002 (3AG-2A-250V)	341001	AGC 2	HKP

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	MASCO PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		14L3-D	"R" & R-78					

ASTATIC NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

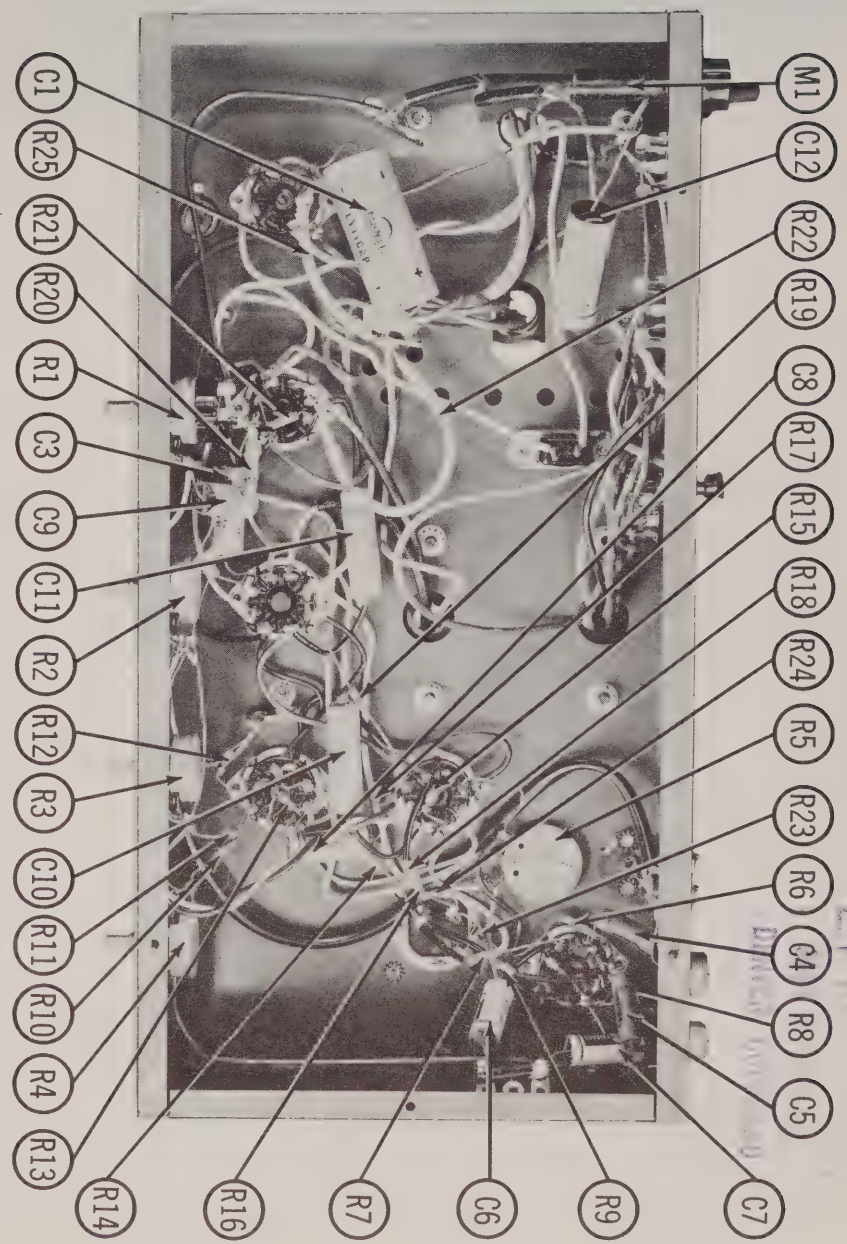
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	MASCO PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M3		*A-83LP or †A-73LP & *A-83 or †A-73	*A-343 & *C-341	*W-6MGA or †W-6MGS & *W-6A or †W-6S	* Metal † Jewel

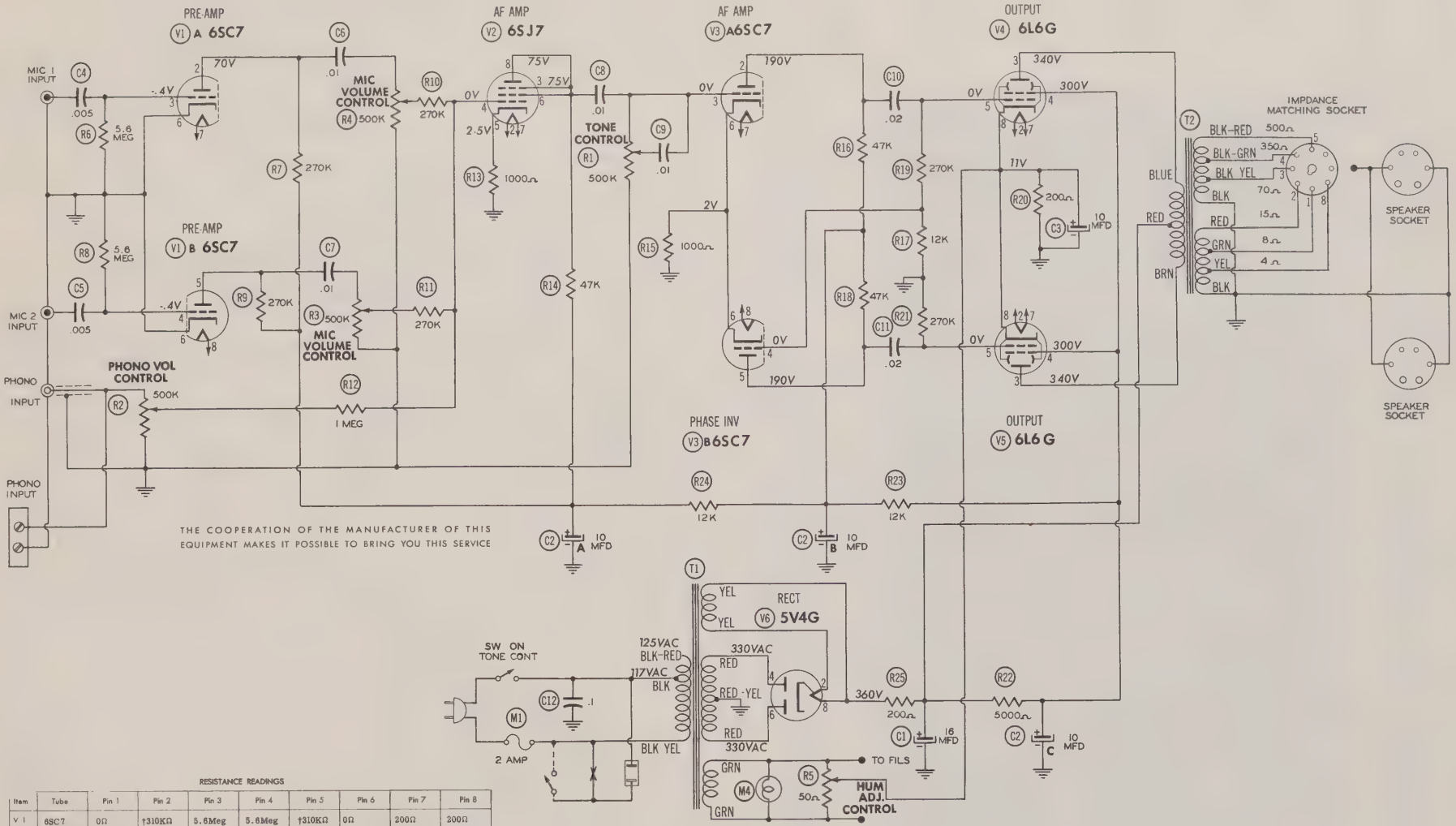
MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
M4	Dial Light		#44, Bayonet

CHASSIS—BOTTOM VIEW



MASCO MODEL ME-27



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SC7	0Ω	†310KΩ	5.6Meg	5.6Meg	†310KΩ	0Ω	200Ω	200Ω
V 2	6SJ7	0Ω	200Ω	†80KΩ	120KΩ	1KΩ	†80KΩ	200Ω	†80KΩ
V 3	6SC7	0Ω	†70KΩ	500KΩ	12KΩ	†70KΩ	1KΩ	200Ω	200Ω
V 4	6L6G	0Ω	200Ω	†290Ω	†5KΩ	280KΩ	†70KΩ	200Ω	200Ω
V 5	6L6G	0Ω	200Ω	†290Ω	†5KΩ	270KΩ	INF	200Ω	200Ω
V 6	5V4G	INF	40KΩ	INF	50Ω	INF	45Ω	INF	40KΩ

† MEASURED FROM PIN 8 OF V6

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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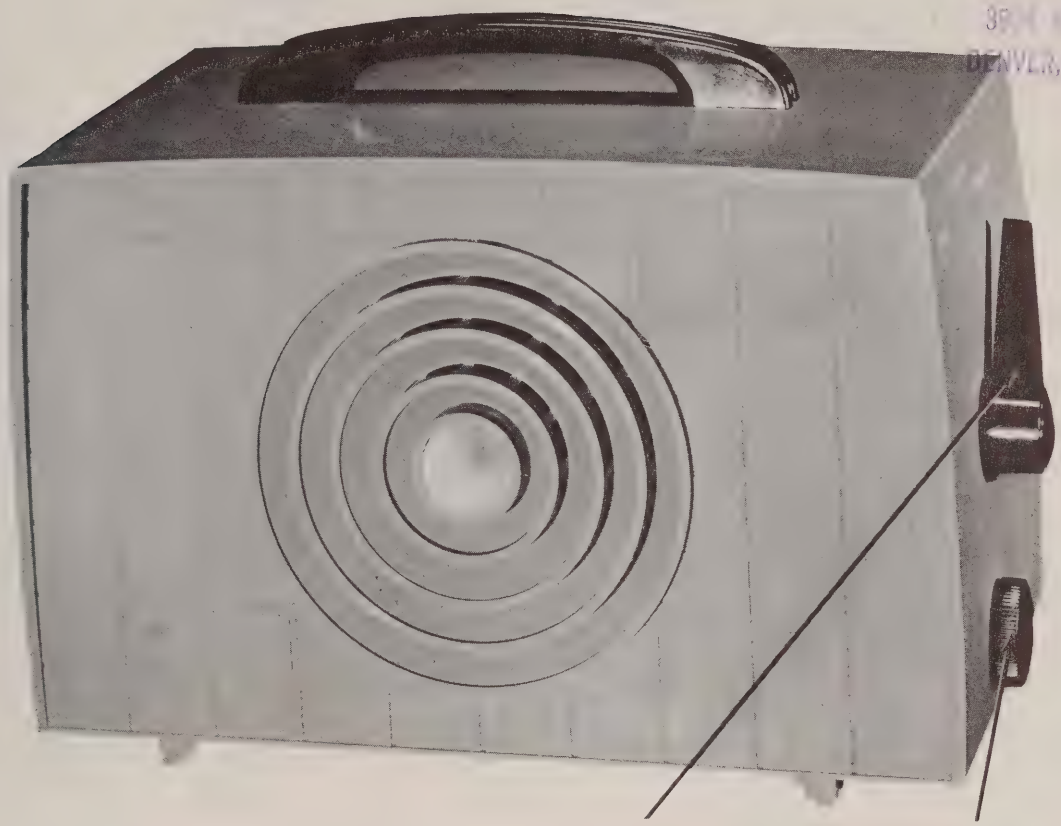
MITCHELL
MODELS 1279, 1280

DEC
L. F. [illegible]
3[illegible]
DENVER, COLORADO

MITCHELL
MODELS 1279, 1280



MITCHELL
MODELS 1279, 1280

TRADE NAME	Mitchell Models 1279, 1280
MANUFACTURER	Mitchell Mfg. Co., 2525 Clybourn Ave., Chicago 14, Illinois
TYPE SET	AC-DC Operated Wireless Intercommunication System
TUBES (Three)	Types 50B5 Osc.-Det., 12AX7 AF Amp., 50B5 Output
POWER SUPPLY	105-125 Volts AC-DC RATING .22 Amp. @ 117 Volts AC

ALIGNMENT

Between B- and the ground lead, connect a modulated signal generator at the desired frequency (approximately 175KC). Set the slide switch to "ground". Adjust for A1 for maximum. Repeat the procedure for each unit used.

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PARTS LIST AND DESCRIPTIONS

MITCHELL MODEL 1279

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: MITCHELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Osc.-Detector	50B5	50B5	7BZ	
V2	AF Amplifier	12AX7	12AX7	9A	
V3	Output	50B5	50B5	7BZ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MITCHELL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■40	150		AFH3-09		C008		FP311.4	TVL-3437	
B	▲30	150								
C	10	150								
C2	4	25		PRS150/4		BR415		TC30	TVA-1203	Note 1
C3	.1	200		P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C4	180	500		1468-181	D6-181	5W5T18	GP2K-181	UC-5318	5GA-T18	
C5A	50			†PA-99	†PC-52	†111TM3	†1403-03	UC-545	†D-3	
B	50							UC-545		
C6	680	500		1468-681	D6-681	5W5T68	GP2K-681	UC-5368	5GA-T68	Note 2
C7	150	500		1468-151	D6-151	5W5T15	GP2K-151	MC236	1FM-315	
C8	1500			SII500	D6-152	TP54	GP2L-152	UC-5215	5HK-D15	Note 3
C9	250	500		1468-251	D6-251	5W5T25	GP2K-251	MC240	1FM-325	
C10	.02	500		P688-02	DF-203	CUB6S2	817-02	PT612	6TM-S2	
C11A	10000									
B	250			♦PA-112-4	♦PC-81	♦113TM2	♦1404-02		♦T-2	
C										
C12	.01	400		P488-01	D6-103	CUB6S1	GP2-333-103	PT411	4TM-S1	
C13	.1	200		P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C14	.1	200		P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C15	.1	200		P288-1	DF-104	CUB2P1		PT401	2TM-P1	

Note 1. Not used in all versions.
Note 2. Some versions use 500MMF in this application.
Note 3. Some versions use .001MFD in this application.
† Items C5A, C5B and R3 are combined in one unit.
When replacing items separately, C11B and C11C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	BA012-304	Q13-133	A47-500K-Z	AB-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A
R2A	500KΩ	½	BA011-1052	Q11-B3	A47-500K-S	AB-59	U-50	Silencer
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R2A

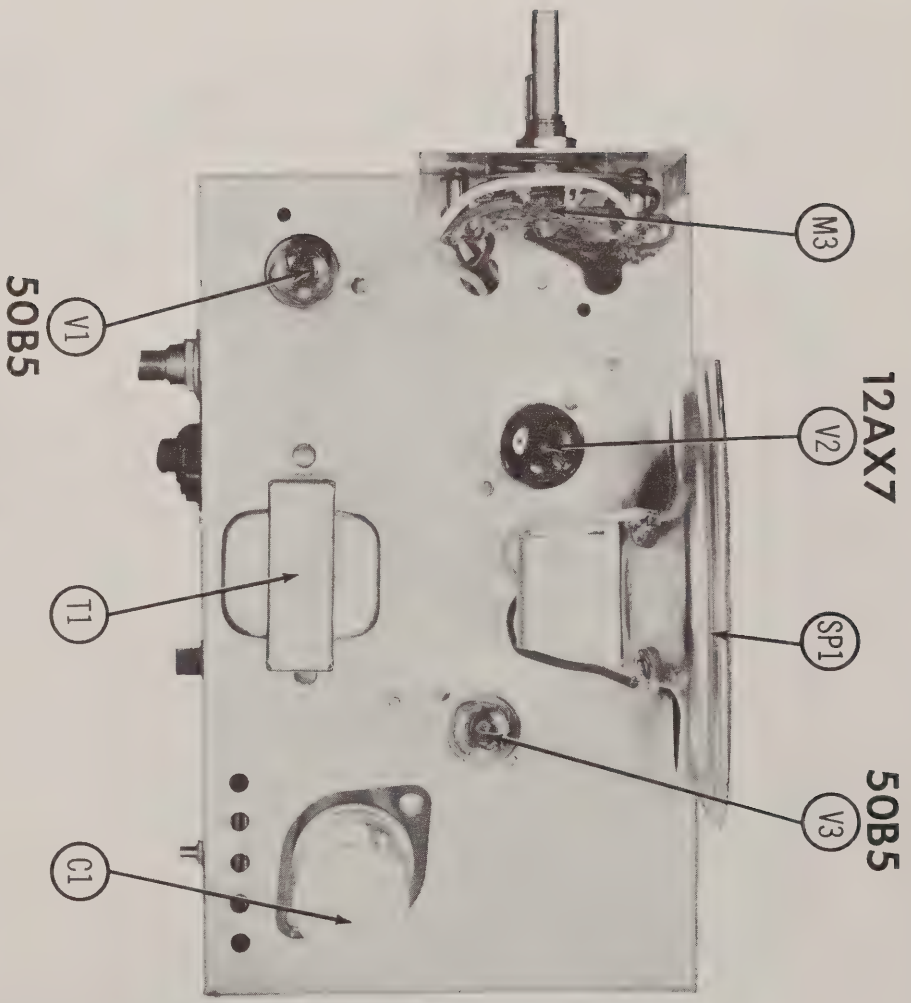
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	NOTES
R3	47KΩ	½	♦	BTS-47K	Note 1
R4	47KΩ	½		BTS-47K	
R5	47KΩ	½		BTS-47K	Note 2
R6	33KΩ	½		BTS-33K	
R7	1000Ω	1		BTA-1000	
R8	470KΩ	½		BTS-470K	Note 3
R9	1Meg	½		BTS-1Meg	
R10	3.3Meg	½		BTS-3.3Meg	Note 4
R11	10KΩ	½		BTS-10K	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: MITCHELL PART No.	IRC PART No.	NOTES
R12	39KΩ	½	†	BTS-39K	
R13A	250KΩ	½		BTS-250K	
B	500KΩ	½		BTS-500K	
R14	150Ω	½		BTS-150	
R15	90Ω	2			Note 7
R16	39Ω	⅓		BTS-39	Note 6
R17	100Ω	⅓		BTS-100	
R18	3000	1		BTA-3000	Note 5

† Items R13A, R13B, C11A, C11B, C11C are combined in one unit.
♦ Items R3, C5A, C5B are combined in one unit.
Note 1. Some versions may use a 50KΩ resistor in this application.
Note 2. Some versions may use a 100KΩ resistor in this application.
Note 3. Some versions may use a 220KΩ resistor in this application.
Note 4. Some versions may use a 4.7Meg resistor in this application.
Note 5. Some versions may use a 3300Ω resistor in this application.
Note 6. Some versions may use a 33Ω resistor in this application.
Note 7. Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MITCHELL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T1	2.4KΩ	45Ω							

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	MITCHELL PART No.	JENSEN PART No.	QUAM PART No.	
SP1	4"	PM	45Ω		ST-739 Mod. P4-X	4A07Z45	

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	MITCHELL PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Osc. Coil	110Ω	55Ω					Output winding -.2Ω

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA						NOTES
	CURRENT	MITCHELL PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	
M1	.047A		1003A	RS65	6S65	5M4	75	

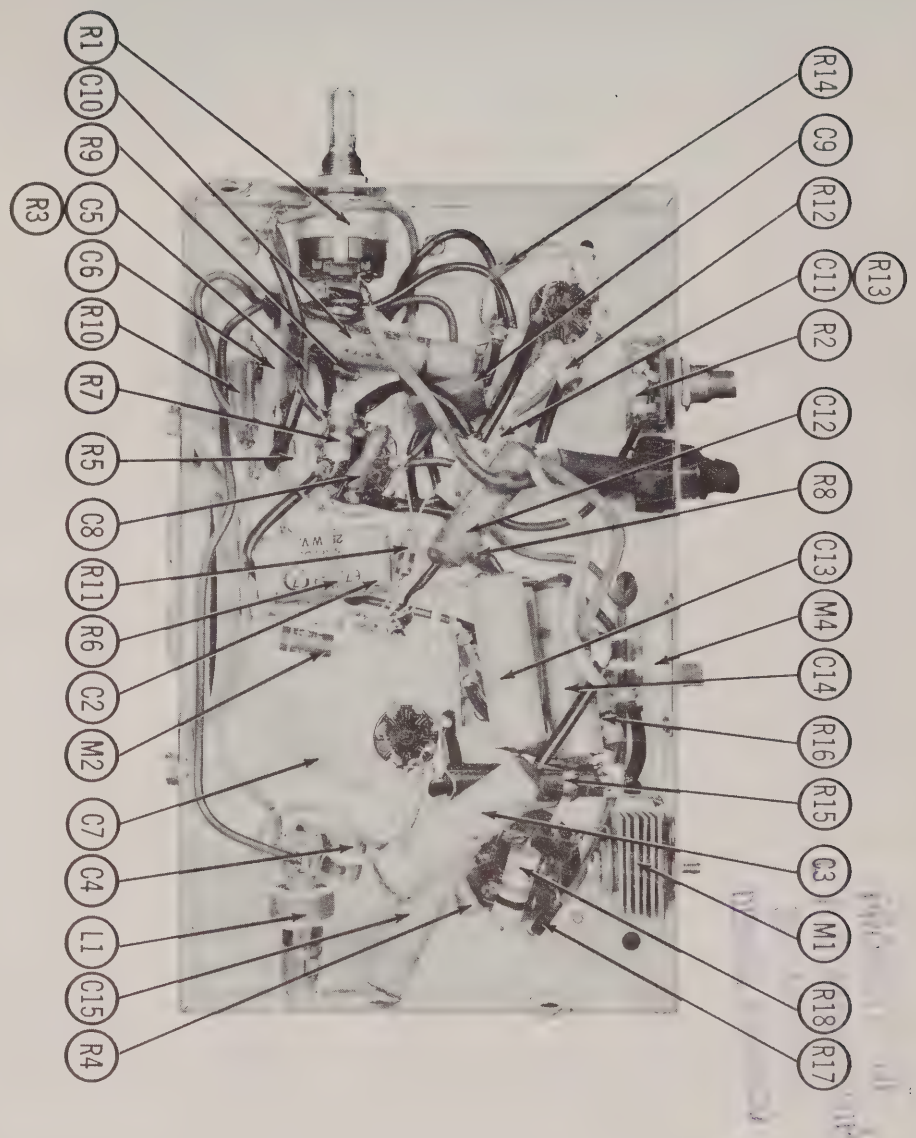
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MITCHELL PART No.	FEDERAL PART No.	SYLVANIA PART No.	
M2	1N51		1N65A	1N34 or 1N34A	Squelch Rectifier

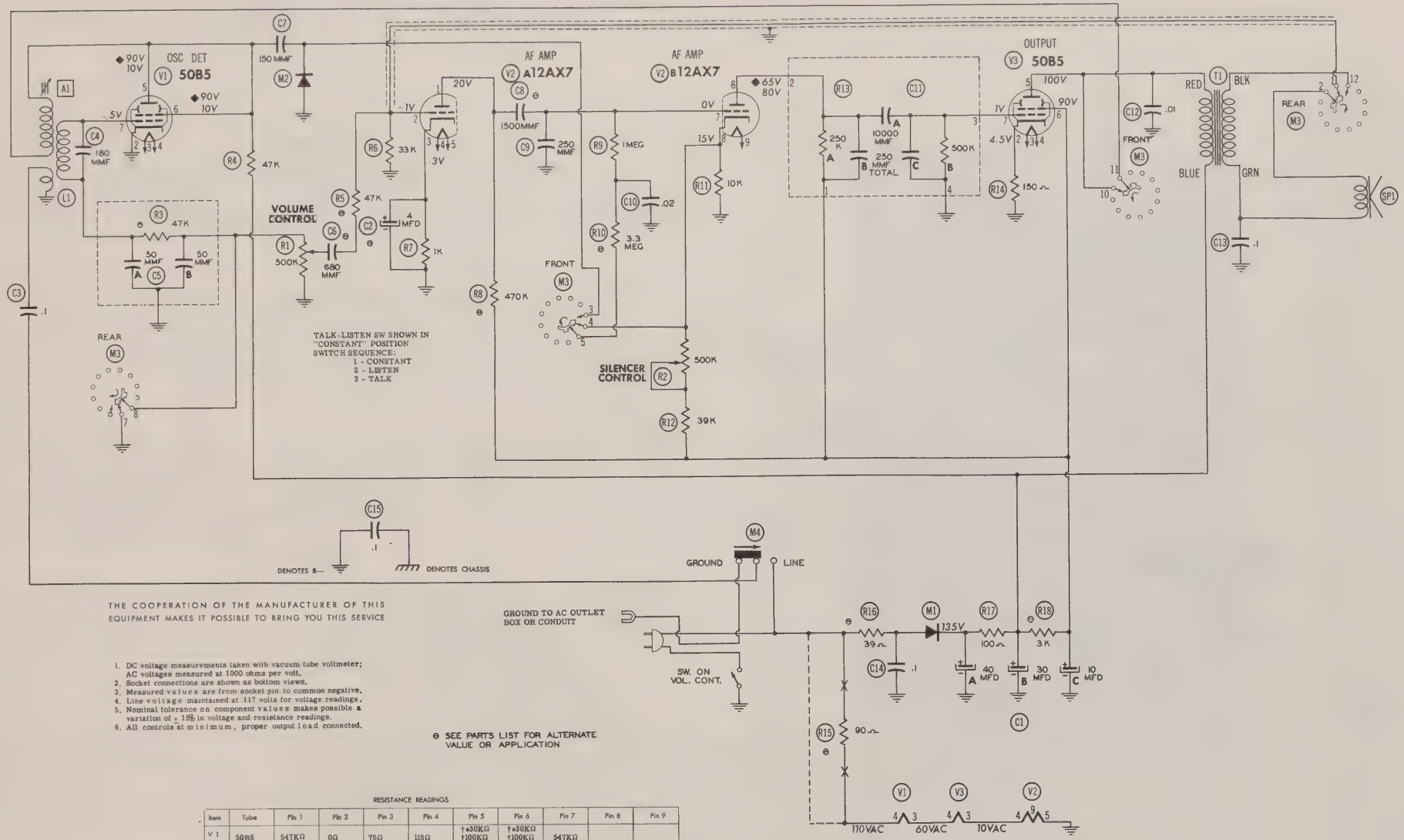
MISCELLANEOUS

ITEM No.	PART NAME	MITCHELL PART No.	NOTES
M3	Switch		Talk-Listen
M4	Switch		Ground-line

CHASSIS—BOTTOM VIEW



MITCHELL MODEL 1279



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	50B5	547KΩ	0Ω	75Ω	115Ω	†♦30KΩ †100KΩ	†♦30KΩ †100KΩ	547KΩ		
V 2	12AX7	†220KΩ	33KΩ	1KΩ	14Ω	0Ω	†500KΩ	5.7Meg	10KΩ	12Ω
V 3	50B5	500KΩ	150Ω	14Ω	75Ω	†210Ω	†3.4KΩ	500KΩ		

ALL READINGS TAKEN IN "LISTEN" POSITION UNLESS OTHERWISE NOTED
♦ TAKEN IN "TALK" POSITION
† MEASURED FROM OUTPUT OF M1

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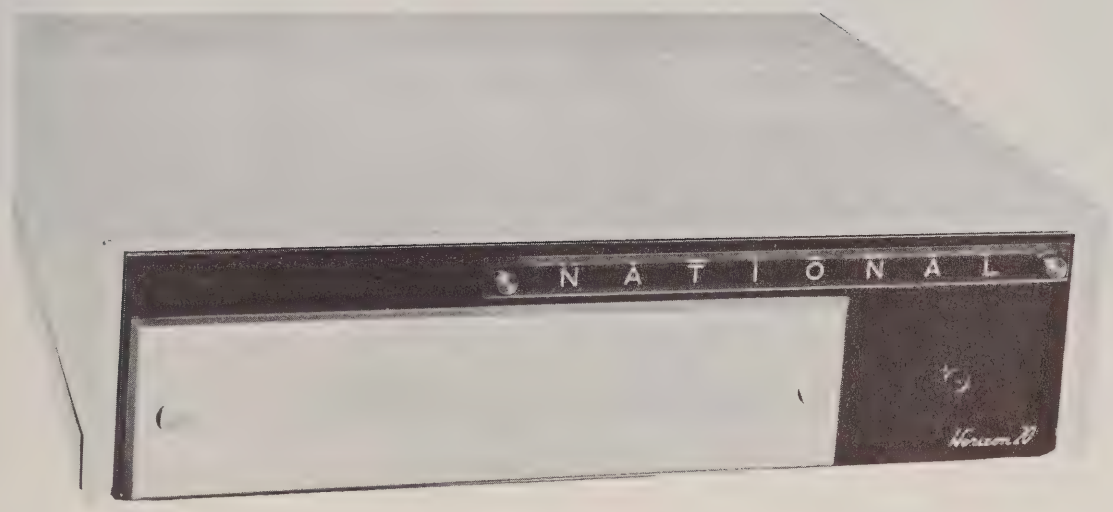
P...
L. F. ...
...
DIGITAL ...

NATIONAL
MODELS Horizon 20, 20A



NATIONAL
MODELS Horizon 20, 20A

TRADE NAME	National Model "Horizon" 20, 20A
MANUFACTURER	National Co., Inc., 61 Sherman St., Malden 48, Mass.
TYPE SET	AC Operated Five Channel 20 Watt Audio Amplifier
TUBES (Four)	Types 12AX7 AF Amp-Phase Inv., (2) 6L6G Output, 5U4G Rectifier
POWER SUPPLY	110-120 Volts AC - 50/60 Cycles RATING 2.08 Amp. @ 117 Volts AC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1955 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

NATIONAL
MODEL "Horizon"20

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: NATIONAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	AF Amp. - Phase Inverter	12AX7	12AX7	9A	
V2	Output	6L6G	6L6G	7S	
V3	Output	6L6G	6L6G	7S	
V4	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: NATIONAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	■40	450		AFH3-46		C037		FP378	TVL-3792	
B	▬80	450								
C	▲20	450								
C2	4	450		PRS450/4		BR445		TC70	TVA-1702	
C3	20	450		PRS450/20		BR2045		TC75	TVA-1709	
C4	20	450		PRS450/20		BR2045		TC75	TVA-1709	
C5	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C6	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C7	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C8	.1	400		P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C9	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C10	10000			BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: NATIONAL PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1000Ω	½	T013-5	Q11-108	A47-1000-S	AB-5	U-4	Hum Balance
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R1A
R2A	500KΩ	½	T013-1	Q13-133	A47-500K-Z	AB-60		Gain
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1		Attach to R2A

RESISTORS

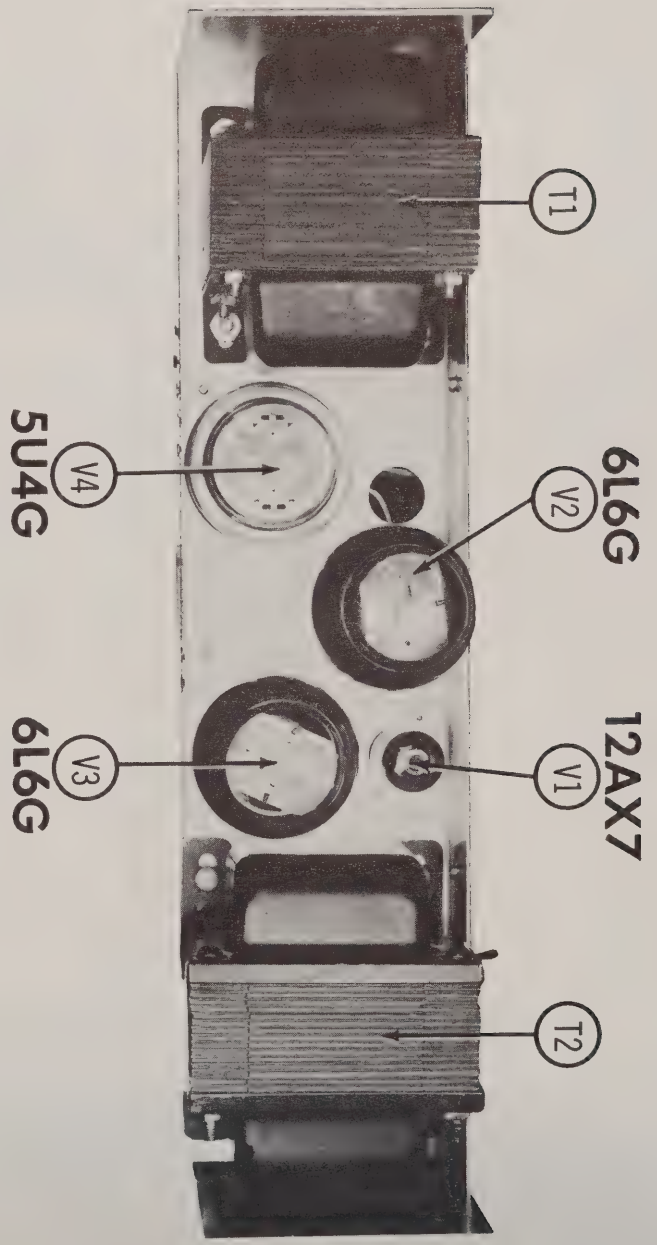
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: NATIONAL PART No.	IRC PART No.	NOTES
R3	330Ω	½		BTS-330	
R4	470KΩ	½		BTS-470K	
R5	68KΩ	2		BTB-68K	
R6	1Meg	½		BTS-1Meg	
R7	1200Ω	½		BTS-1200	
R8	33KΩ 5%	½		BTS-33K 5%	
R9	33KΩ 5%	½		BTS-33K 5%	
R10	4.7Meg 5%	½		BTS-4.7Meg 5%	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: NATIONAL PART No.	IRC PART No.	NOTES
R11	4.7Meg 5%	½		BTS-4.7Meg 5%	
R12	470Ω	½		BTS-470	
R13	430KΩ 5%	½		BTS-430K 5%	
R14	470Ω	½		BTS-470	
R15	470KΩ 5%	½		BTS-470K 5%	
R16	3900Ω	½		BTS-3900	
R17	22KΩ	½		BTS-22K	
R18	5600Ω	1		BTA-5600	
R19	100KΩ	1		BTA-100K	
R20	10KΩ	½		BTS-10K	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: NATIONAL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @ 2.08A	684VCT .141ADC	5VAC @ 3A	6.3VAC @ 2.34A						

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI. 1	IMPEDANCE SEC.	REPLACEMENT DATA NATIONAL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T2	1.42K	16Ω							
	PRI 2	Tap							
	1.42KΩ	@ 8Ω							

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA NATIONAL PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
L1	.141A	83Ω	1.7HY		C-2327	C-2994		C5040	26C41

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA NATIONAL PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.005		323D8490	V-17HP			O26-25H-Q	

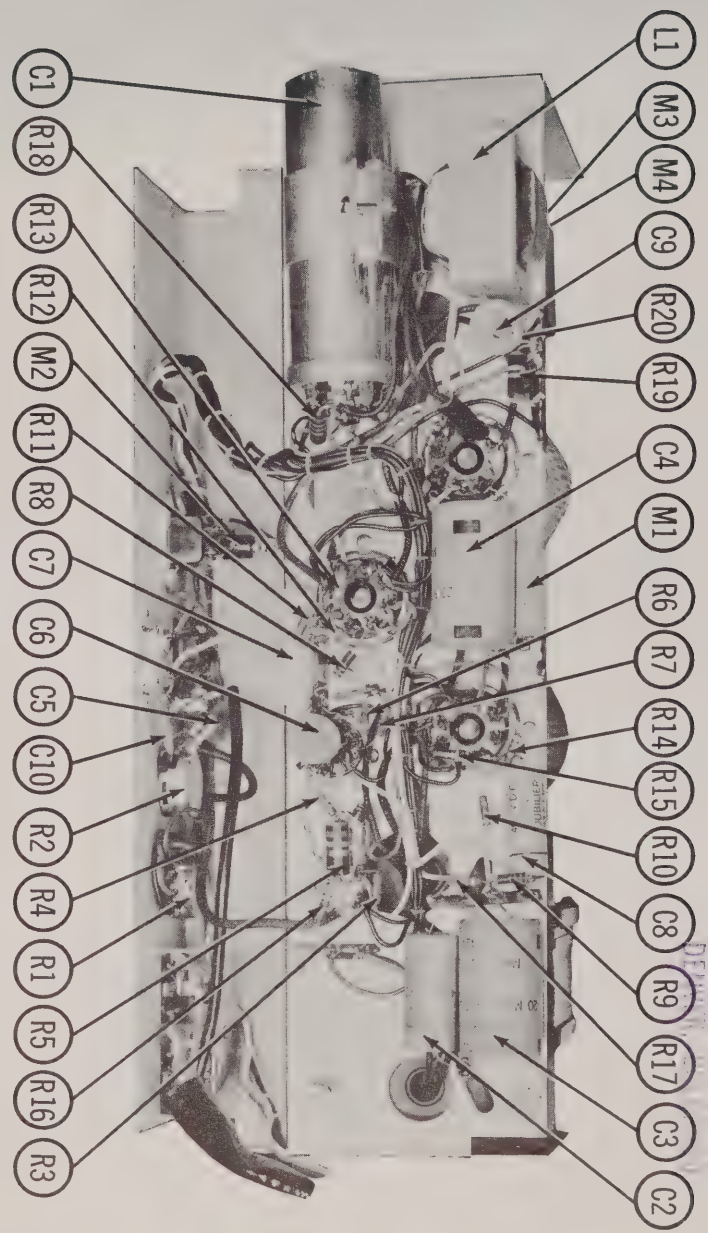
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA NATIONAL PART No. FUSE	NATIONAL PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	2A 250V		E510-1	312002 (3AG-2A-250V)	342001	AGC2	HKP

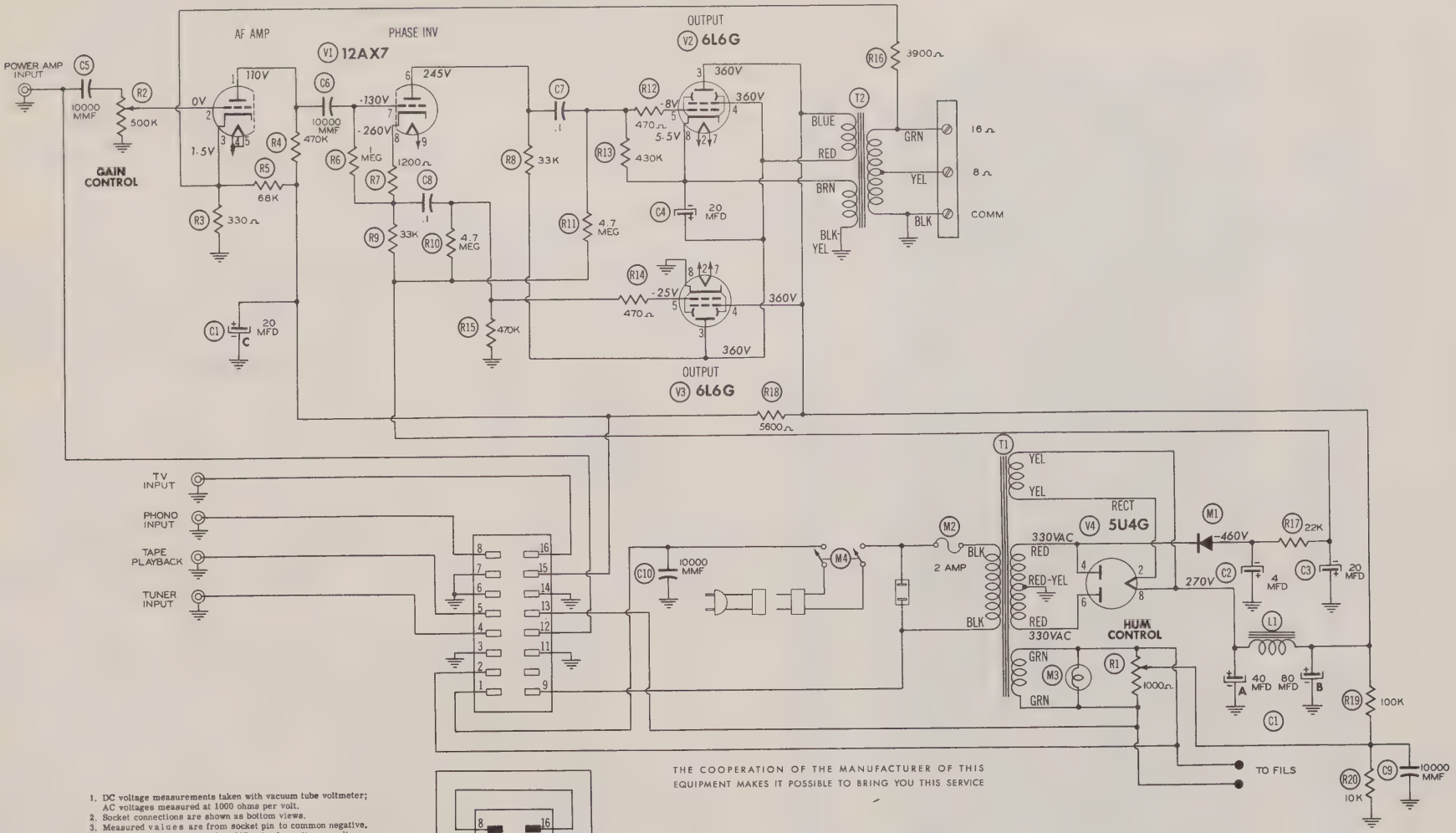
MISCELLANEOUS

ITEM No.	PART NAME	NATIONAL PART No.	NOTES
M3	Panel Light		#47, Bayonet
M4	Switch	T755-1	Interlock

CHASSIS—BOTTOM VIEW



NATIONAL MODEL "Horizon" 20



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	530KΩ	250KΩ	330Ω	19KΩ	19KΩ	†33KΩ	1.2Meg	56KΩ	19KΩ
V 2	6L6G	0Ω	19KΩ	†85Ω	†160Ω	430KΩ	430KΩ	19KΩ	85Ω	
V 3	6L6G	0Ω	19KΩ	†85Ω	†85Ω	470KΩ	470KΩ	19KΩ	0Ω	
V 4	5U4G	INF.	60KΩ	INF.	95Ω	INF.	90Ω	85Ω	60KΩ	

† MEASURED FROM PIN 2 OF V4.

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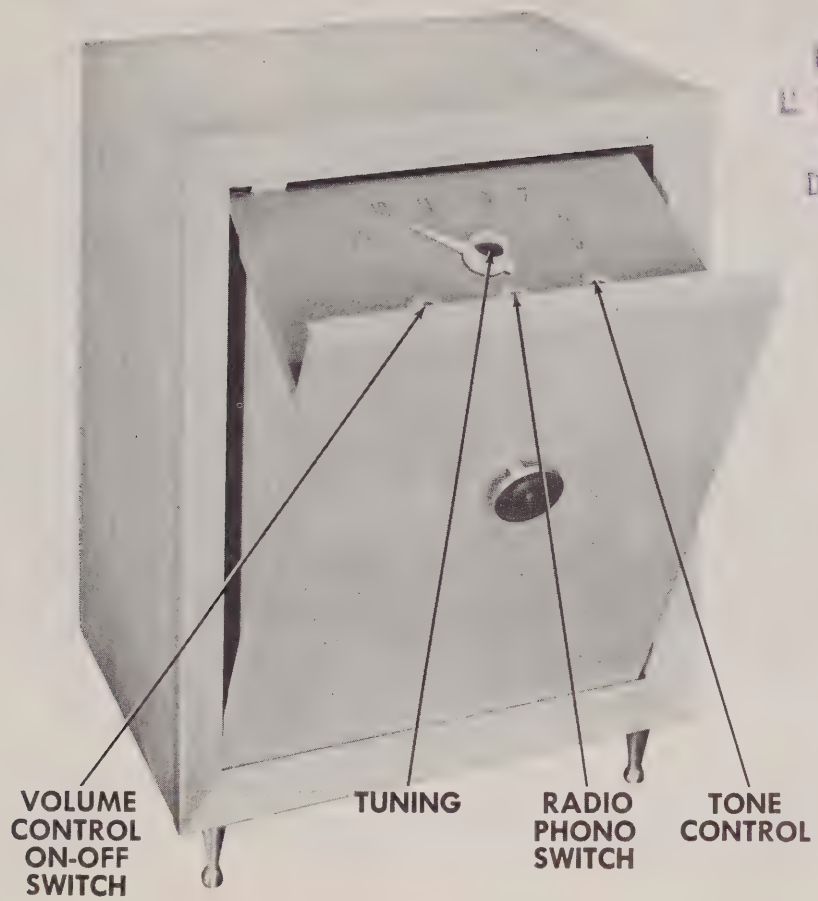
PACKARD-BELL
MODELS 541, 543



PACKARD-BELL
MODELS 541, 543

TRADE NAME	Packard-Bell Models 541, 543
MANUFACTURER	Packard-Bell Co., Service Div., 11th. & Hope Sts., Los Angeles 15, California
TYPE SET	AC Operated AM Superheterodyne Receiver (Model 541 Employs Record Changer)
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AV6 Det.-AVc-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC (Model 541 AC only) RATING .23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400~Mod)	Tuning gang fully closed	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to antenna station terminal lug. Low side to chassis.	1620KC	Tuning gang fully open	"	A5	Adjust for maximum output.
3.	"	"	1500KC	Tune to 1500KC signal	"	A6	"

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT USED IN MODEL 541 (PART NO. 54046A) - SEE V-M MODEL 950 - PHOTOFACT SET #216 - FOLDER #11 OR RECORD CHANGER MANUAL CM-5.

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PARTS LIST AND DESCRIPTIONS

PACKARD-BELL MODEL 541

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Packard-Bell PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp.	12AV6	12AV6	7BT	
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	6BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	24073	PRS150/50-50		BBRD5515		TCD49	TVA-2453	Yellow Red
B	50	150								
C2	.047	200	23017	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C3	220		23915	BPD-221	D6-221	G051	811-221	UC-5322	5GA-T22	
C4	2000			BPD-002	DD-202	K072	811-002	UC-522	5HK-D2	
C5	.047	200	23017	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C6	220		23915	BPD-221	D6-221	G051	811-221	UC-5322	5GA-T22	
C7	10000		23939	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C8	5000		23931	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C9	5000		23931	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C10	10000		23939	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C11	10000		23939	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C12	.047	200	23017	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	
C13	.15	200	23028	P288-15		CUB2P15		PT4015	2TM-P15	

Note 1. Later production versions use 2000MMF in this application (part no. 23974).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Packard-Bell PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	25030	Q18-133X	A47F1-500K	ABT-62	UT-429	Volume - tapped @ 40KΩ
B	Shaft		Not Req.	Not Req.	KSS- 3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A
R2A	500KΩ	½	25515	Q11-133	A47-500K-S	AB-59	U-50	Tone
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R2A

RESISTORS

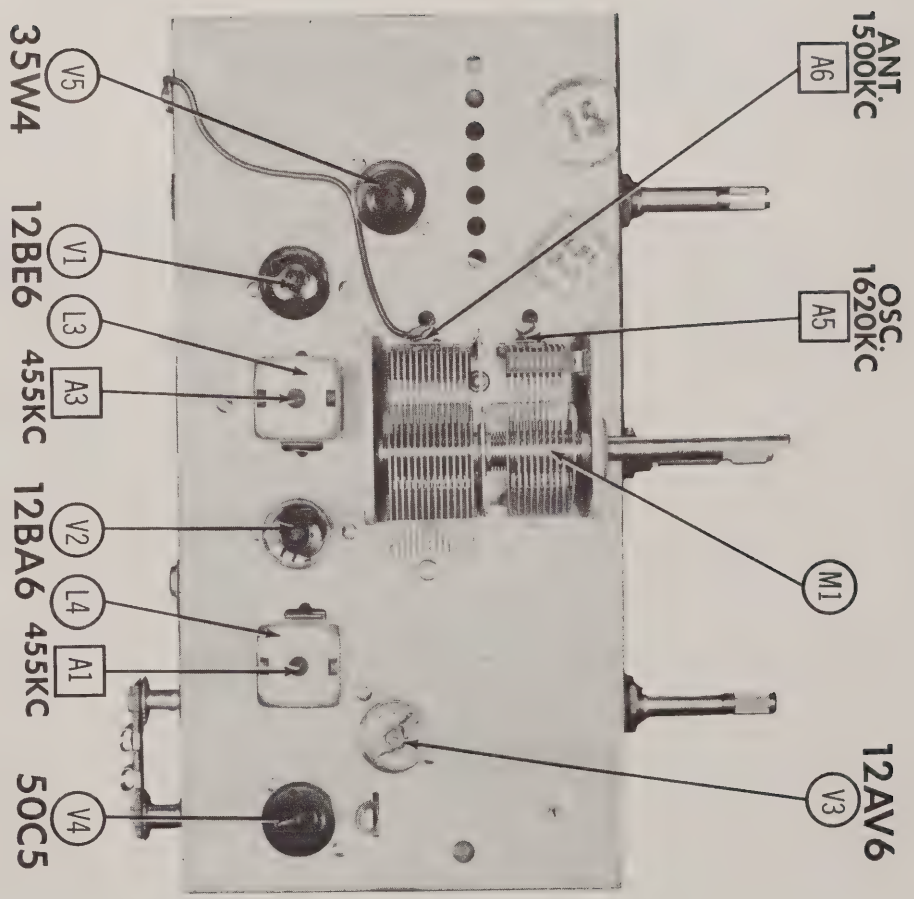
ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Packard-Bell PART No.	IRC PART No.	NOTES
R3	22KΩ	½	73041	BTS-22K	
R4	220Ω	½	73017	BTS-220	
R5	2.2Meg	½	73165	BTS-2.2Meg	
R6	33KΩ	½	73043	BTS-33K	
R7	4.7Meg	½	73169	BTS-4.7Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Packard-Bell PART No.	IRC PART No.	NOTES
R8	470KΩ	½	73157	BTS-470K	
R9	470KΩ	½	73157	BTS-470K	
R10	150Ω	½	73015	BTS-150	
R11	1000Ω	1	73225	BTA-1000	
R12	68Ω	½	73011	BTS-68	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: Packard-Bell PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.3KΩ	3.3Ω	89447 89445 ①	A-3332	A-3025	S-12X	Z1101	26S58	① Used in Model 541, has 6 to 8Ω secondary

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	Packard-Bell PART No.	JENSEN PART No.	QUAM PART No.	
SP1	6"	PM	3.3Ω	83306	ST-108 Mod. P6-X	6A1	① Two 4" speakers used in Model 541
	4"	PM	3.3Ω	83013 ①	ST-113 Mod. P4-X	4A1	

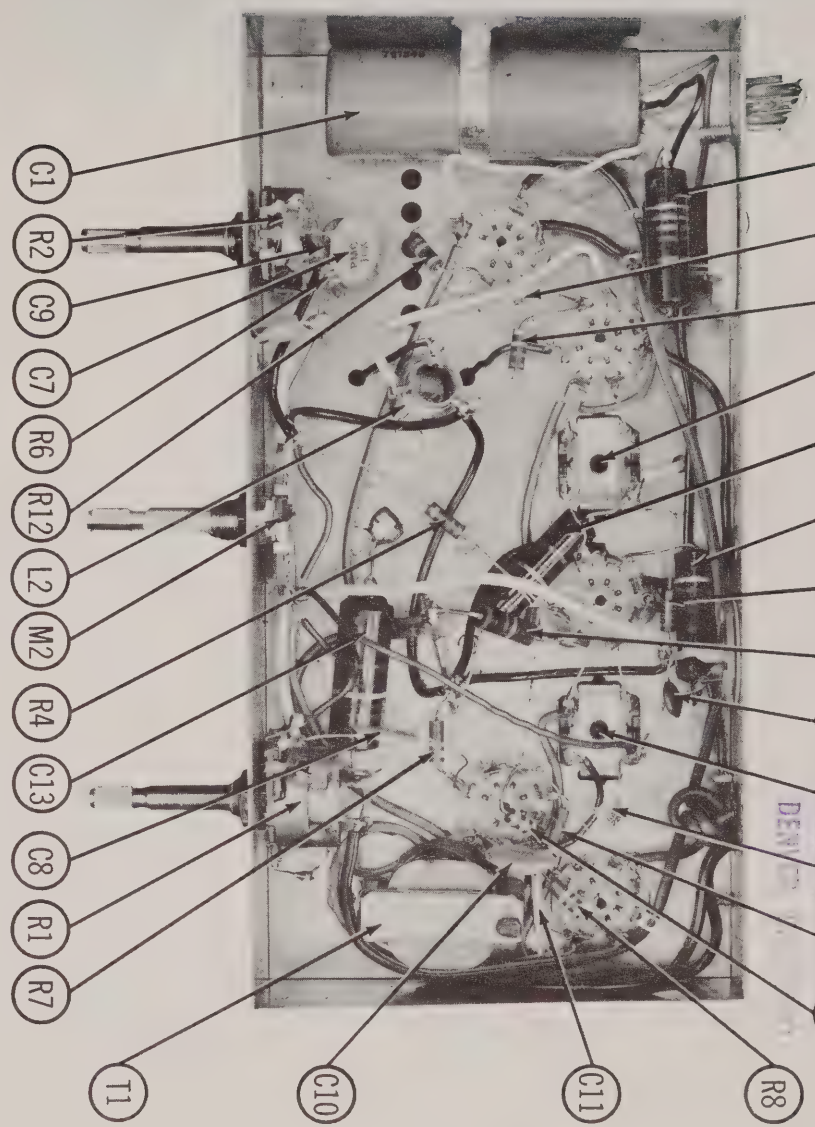
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	Packard-Bell PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Ant.	3.3Ω		29331				
L2	Osc. Coil	.6Ω	5.5Ω	29220	14-1074		70-OSC	
L3	Input IF	20Ω	19Ω	29066	16-6758	BC-352	12-C1	
L4	Output IF	15Ω	15Ω	29067	16-6758	BC-353	12-C2	

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M1	Tuning Gang	23534	24-480MMF, 30-185MMF
M2	Switch	86037	Radio-Phono
	Cabinet		Model 541- Specify finish
	Cabinet		Model 543 - Specify finish
	Knob	52082	Tuning - Specify cabinet finish
	Knob	52083	On-off-volume, tone or radio-phono switch (Specify cabinet finish)
	Dial	38133	Model 541
	Dial	38139	Model 543

CHASSIS—BOTTOM VIEW



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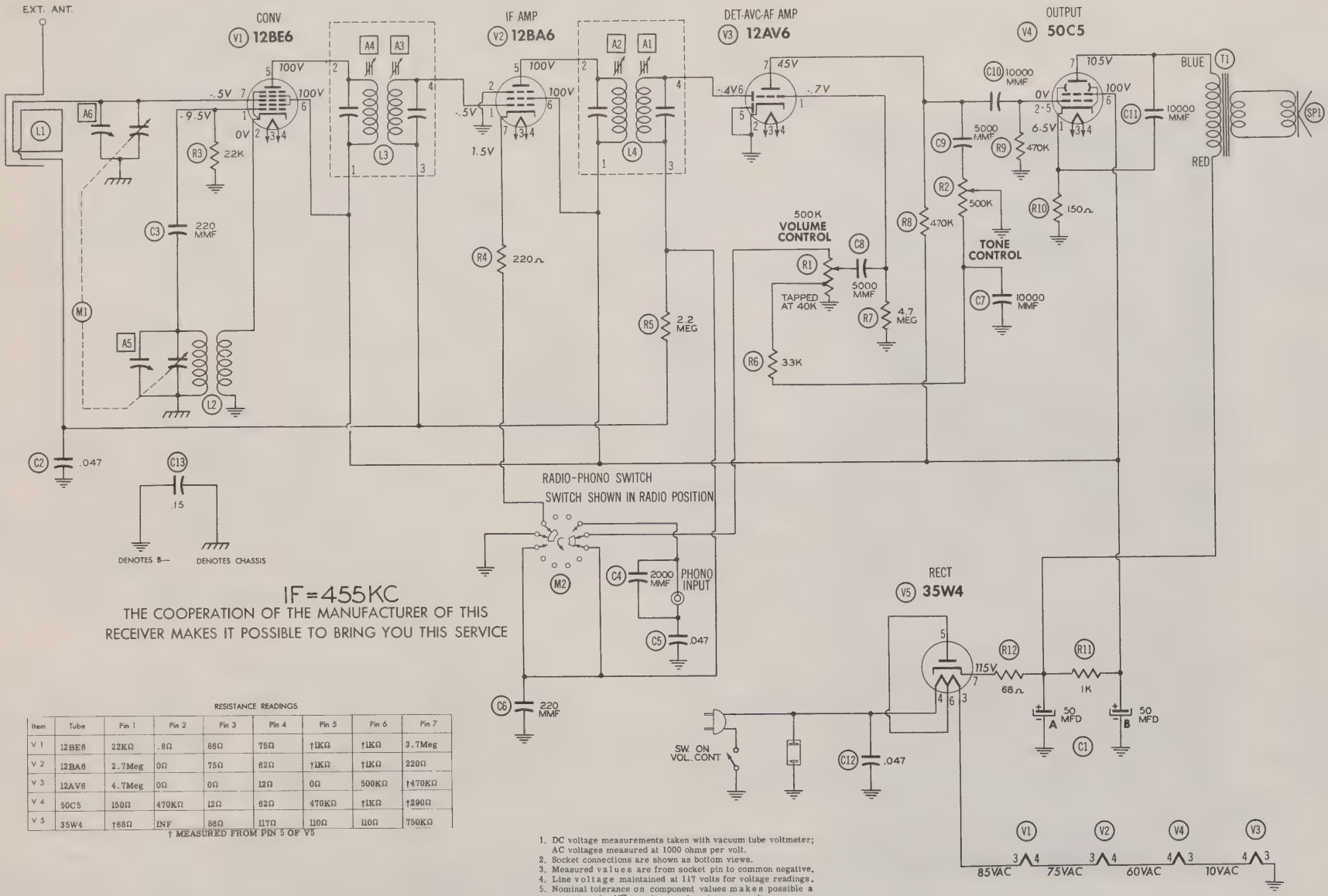

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.8Ω	88Ω	75Ω	†1KΩ	†1KΩ	3.7Meg
V 2	12BA6	2.7Meg	0Ω	75Ω	62Ω	†1KΩ	†1KΩ	220Ω
V 3	12AV6	4.7Meg	0Ω	0Ω	12Ω	0Ω	500KΩ	†470KΩ
V 4	50C5	150Ω	470KΩ	12Ω	62Ω	470KΩ	†1KΩ	†290Ω
V 5	35W4	†68Ω	INF	86Ω	117Ω	110Ω	110Ω	750KΩ

† MEASURED FROM PIN 5 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PROFESSIONAL
L. F. DU
3924 IN
DENVER, COLORADO

SILVERTONE
MODEL 3040A (Ch. 528.311)

SILVERTONE
MODEL 3040A (Ch. 528.311)

TRADE NAME	Silvertone Model 3040A (Ch. 528. 311)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC - 60 Cycles
RATING	.24 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC - 1630KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2	"	"	1630KC	"	"	A5	"
3		Loop	1400KC	Tune to 1400KC signal.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT 488.219 - SEE PHOTOFACT SET #244 - FOLDER #9.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp.	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp.	12AT6	12AT6	7BT	
V4	Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	T18-304	PRS150/50-30		BBRD5315		TCD-497	TVA-2450	
B	30	150								
C2	.05	200	T16-197	P288-05	DF-503	PJ2S5		PT415	2TM-S5	
C3	47		T15-229	S147N750	TCN-47	TN14	N750K-470	NT-5447	5TCU-Q47	
C4A	220		T17-104	PA-100-1	D6-221		GP1K-221	UC-5322	34C3	
B	2000				DD-202		801-002	DC-522		
C	220				D6-221		GP1K-221	UC-5322		
D	5000				DD-502		801-005	DC-525		
C5	.005	600	T16-190	P688-005	D6-502	CUB6D5	GP2K-502	PT625	6TM-D5	
C6	.005	600	T16-190	P688-005	D6-502	CUB6D5	GP2K-502	PT625	6TM-D5	
C7	.05	400	T16-189	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C8	.05	400	T16-189	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C9	.05	400	T16-189	P488-05	DF-503	CUB4S5		PT415	4TM-S5	

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	A24-194	*QJ-347R		F1-40	UF55L	Tone - Panel
B	1Meg	½				R2-52	UR16A	Volume - Rear
C	Switch					KB-1	US-26	Attach to R1B

* CONCENTRIKIT EQUIVALENT: KIT K-2, BASE ELEMENTS & SHAFTS: B11-137 & P1-102 (PANEL)
B13-137 & R2-127 (REAR)
76-1 SWITCH

RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R2	22KΩ	½	T60-659	BTS-22K	
R3	47Ω	½	T60-789	BTS-47	
R4	47KΩ	½	T60-730	BTS-47K	
R5	2.2Meg	½	T60-726	BTS-2.2Meg	
R6	10Meg	½	T60-728	BTS-10Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R7	220KΩ	½	T60-667	BTS-220K	
R8	470KΩ	½	T60-731	BTS-470K	
R9	180Ω	½	T60-774	BTS-180	
R10	1000Ω	1	T60-732	BTA-1000	
R11	27Ω	½	T60-690	BTS-27	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: SILVERTONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	2.6KΩ	3.4Ω	80-283	A-3330	A-3031		Z1102	24S50A	

SPEAKER

ITEM No.	RATINGS: SIZE	RATINGS: FIELD	RATINGS: V. C. IMP.	REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3.4Ω	79-412	ST-105 Mod. P5-X	5A1	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	.2Ω		T82-72				
L2	Osc. Coil	.8Ω	8Ω	T10-645	14-1074	BC-381*	70-Osc.	
L3	Input IF	20Ω	20Ω	T10-508	16-6758	BC-352	12-C1	
L4	Output IF	20Ω	20Ω	T10-479	16-6758	BC-353	12-C2	

* Drill mounting hole.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	ASTATIC PART No.: CARTRIDGE	ASTATIC PART No.: NEEDLE	SHURE PART No.: CARTRIDGE	SHURE PART No.: NEEDLE	ELECTRO-VOICE PART No.: CARTRIDGE	ELECTRO-VOICE PART No.: NEEDLE	REMARKS
M1	K3797	51-2J	G-AG-J	WC38	A58U	47	0-2 or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

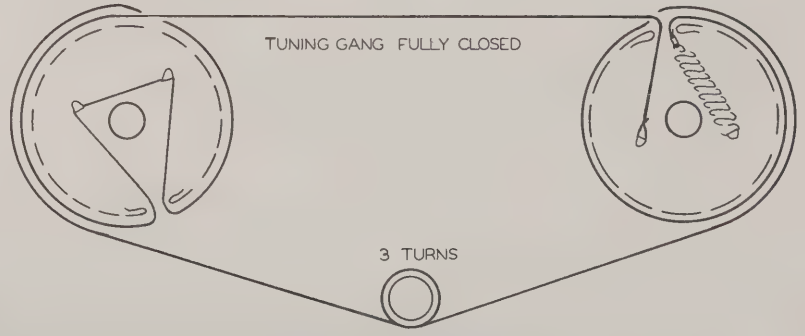
PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

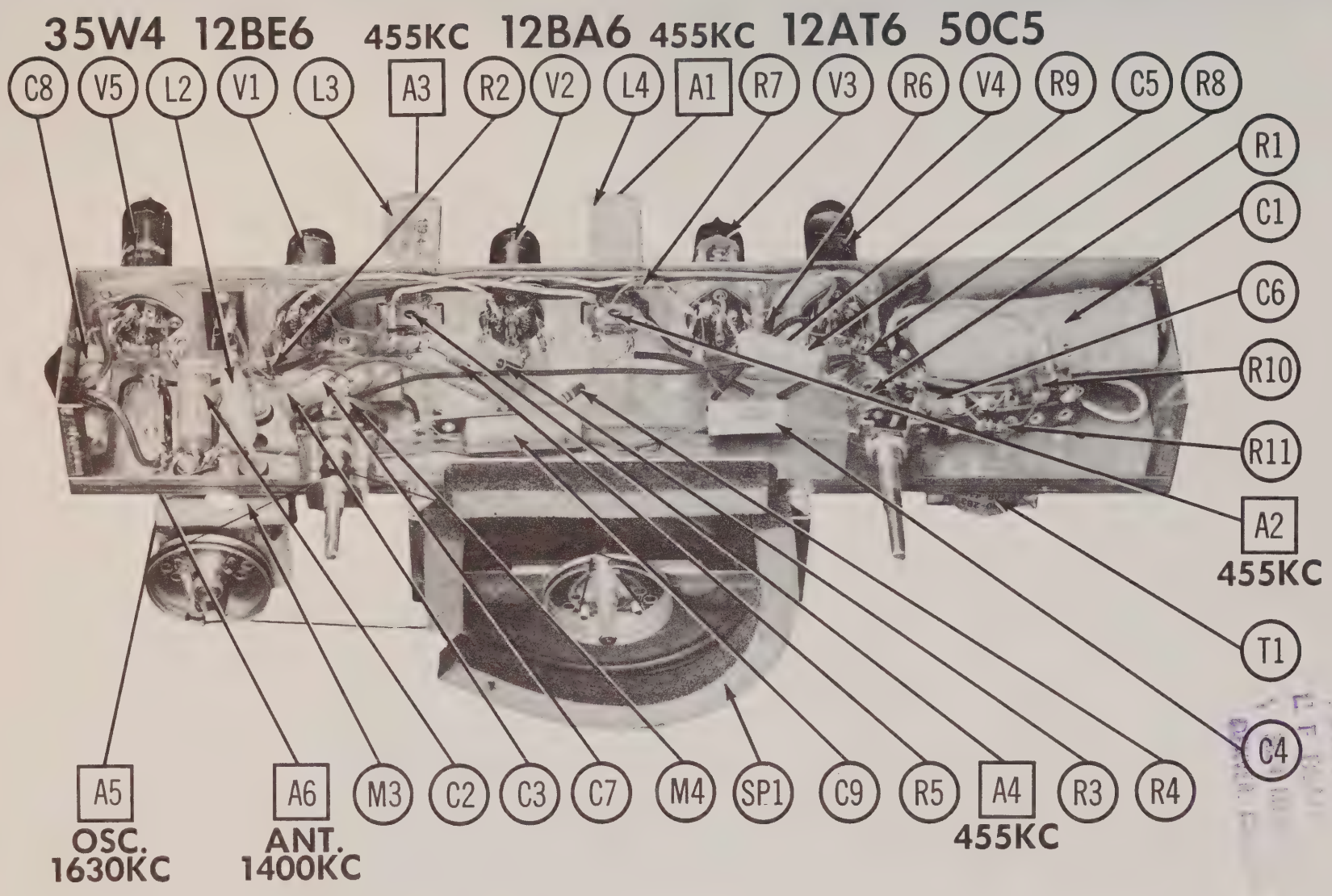
ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M2		*S-652 or †S-642 or ♦S-642D	*B-326 or †B-334 or ♦B-334D	*W-3AGA or †W-3AGS or ♦W-3AGD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Cap.	T19-225	28-467MMF; 34-194MMF.
M4	Switch	T69-196	Radio-Phono
	Cabinet	T42-559	
	Knob	T52-410	Tuning & Tone
	Knob	T52-321	On-Off-Volume & Radio-Phono Switch
	Dial Pointer	T58-83	



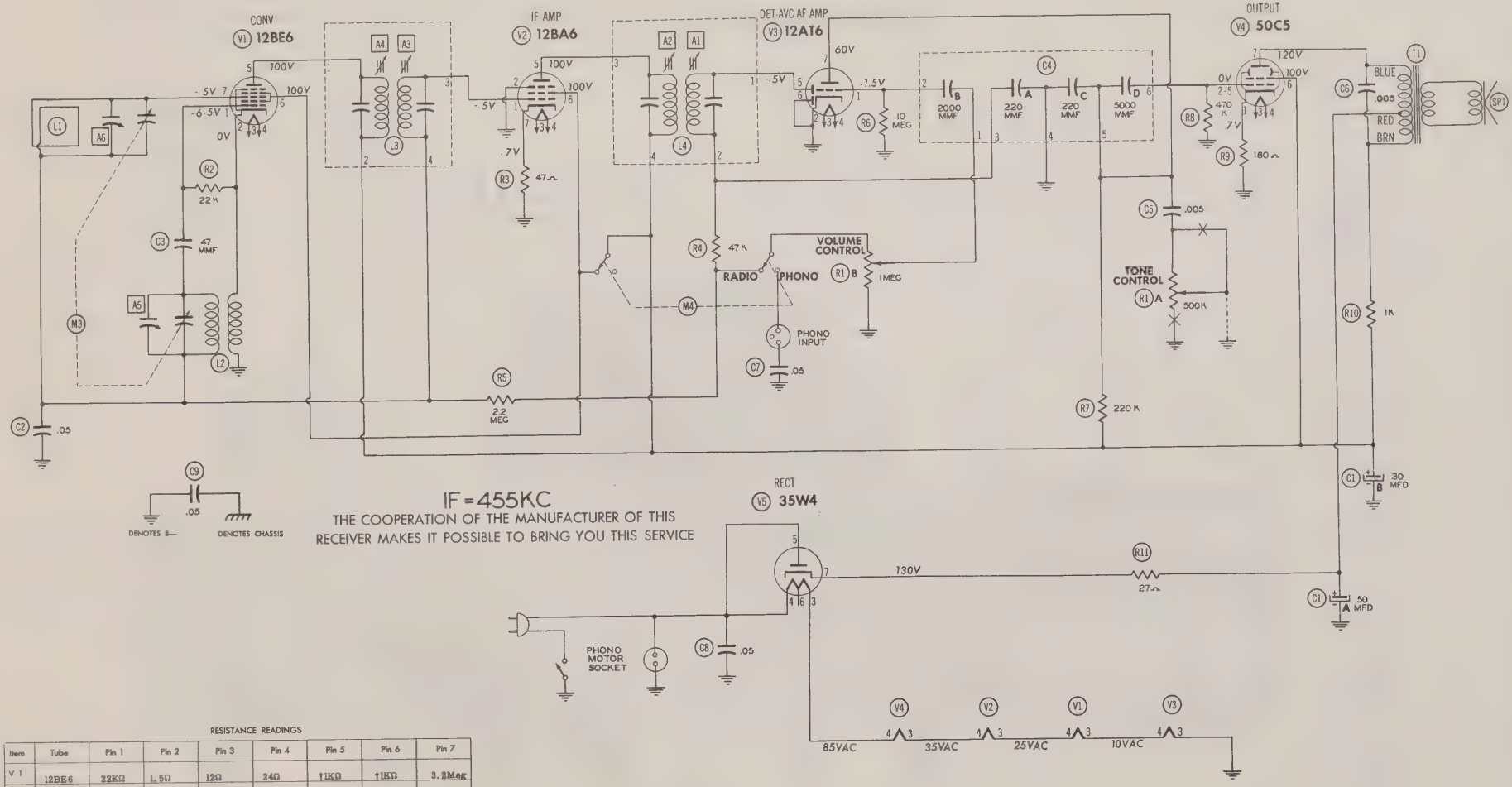
DIAL CORD STRINGING



CHASSIS BOTTOM VIEW

SET 270 FOLDER 13

SILVERTONE
MODEL 3040A (Ch. 528.3U)



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1.5Ω	12Ω	24Ω	†1KΩ	†1KΩ	3.2Meg
V 2	12BA6	3.2Meg	0Ω	24Ω	36Ω	†1KΩ	†1KΩ	47Ω
V 3	12AT6	10Meg	0Ω	0Ω	12Ω	1Meg	0Ω	†220KΩ
V 4	50C5	180Ω	470KΩ	36Ω	86Ω	470KΩ	†1KΩ	†150Ω
V 5	35W4	INF	INF	86Ω	117Ω	117Ω	110Ω	20KΩ

† MEASURED FROM PIN 7 OF V5

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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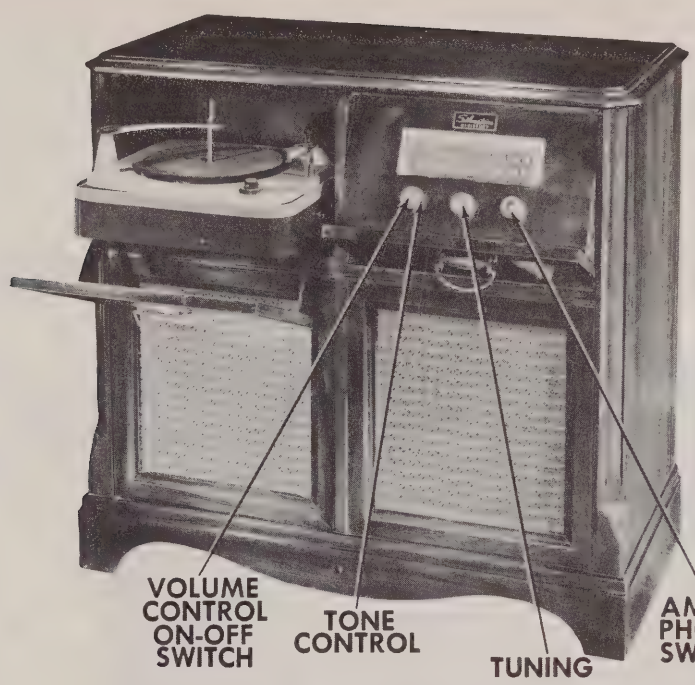
SILVERTONE
MODEL 3068 (Ch. 100.174)

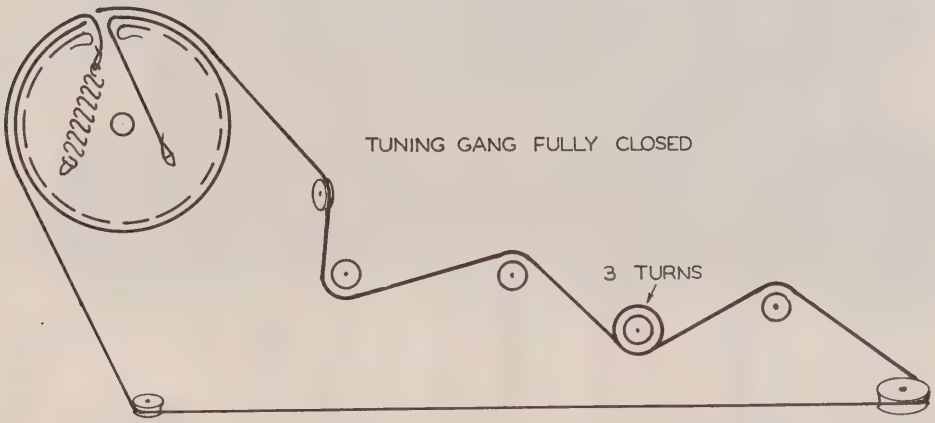


PROPERTY OF
L. F. MANN
3924 MEADE
DENVER, COLORADO

SILVERTONE
MODEL 3068 (Ch. 100.174)

TRADE NAME	Silvertone Model 3068 (Ch. 100.174)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	AC Operated AM-FM-Phono Combination Superheterodyne Receiver With 3 Speed Automatic Record Changer
TUBES (Eight)	Types 6AG5 RF Amp., 12AT7 Osc.-Mixer, 6BA6 FM AM IF Amp., 6BA6 2nd. FM IF Amp., 6AL5 Ratio Det., 6SQ7GT AM Det.-AVC-AF Amp., 6V6GT Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .67 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	540KC-1700KC — FREQ. MOD. 88MC-108MC

RECORD CHANGER UNIT - SILVERTONE CHASSIS MODEL 488.216



DIAL CORD STRINGING

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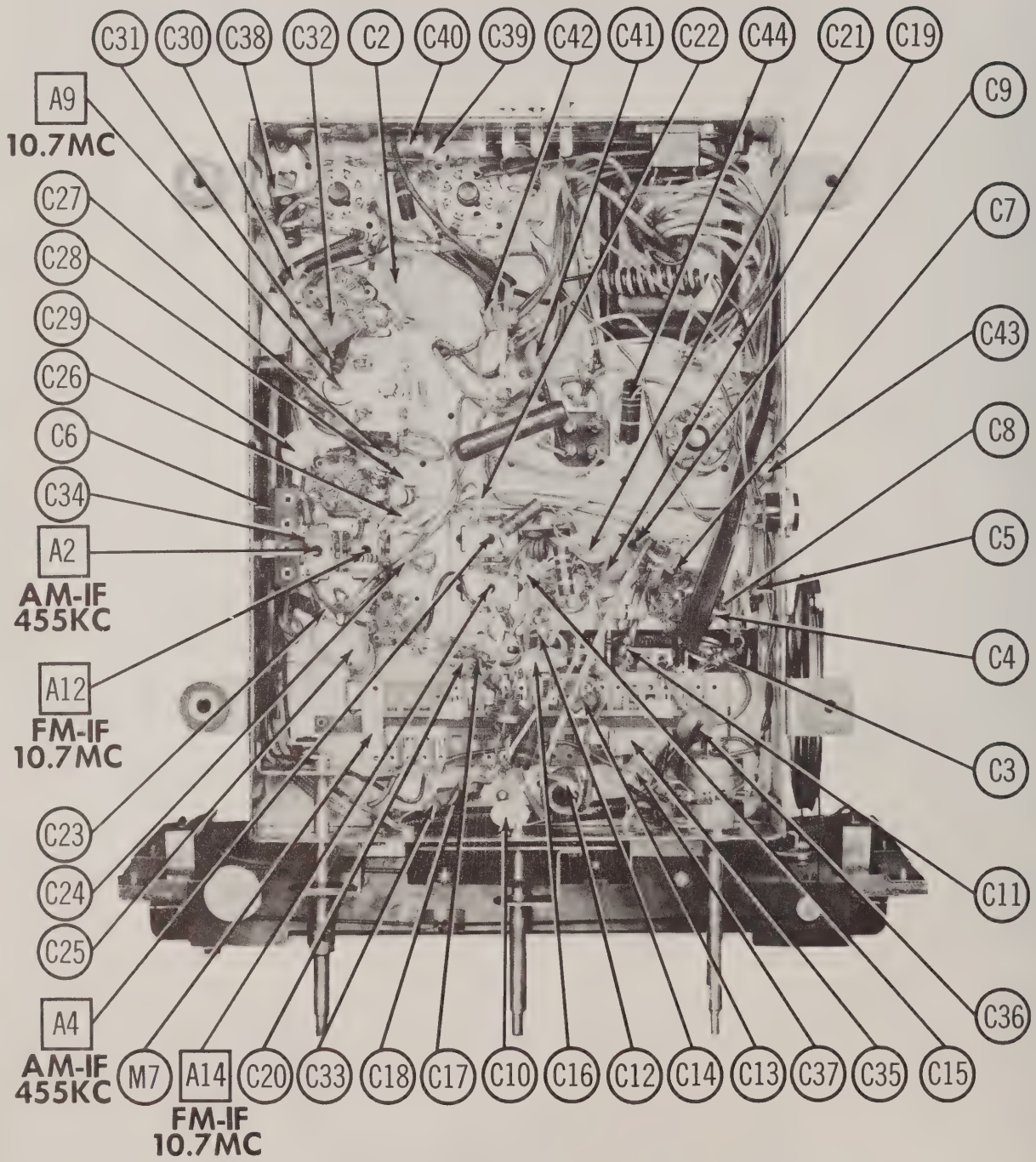
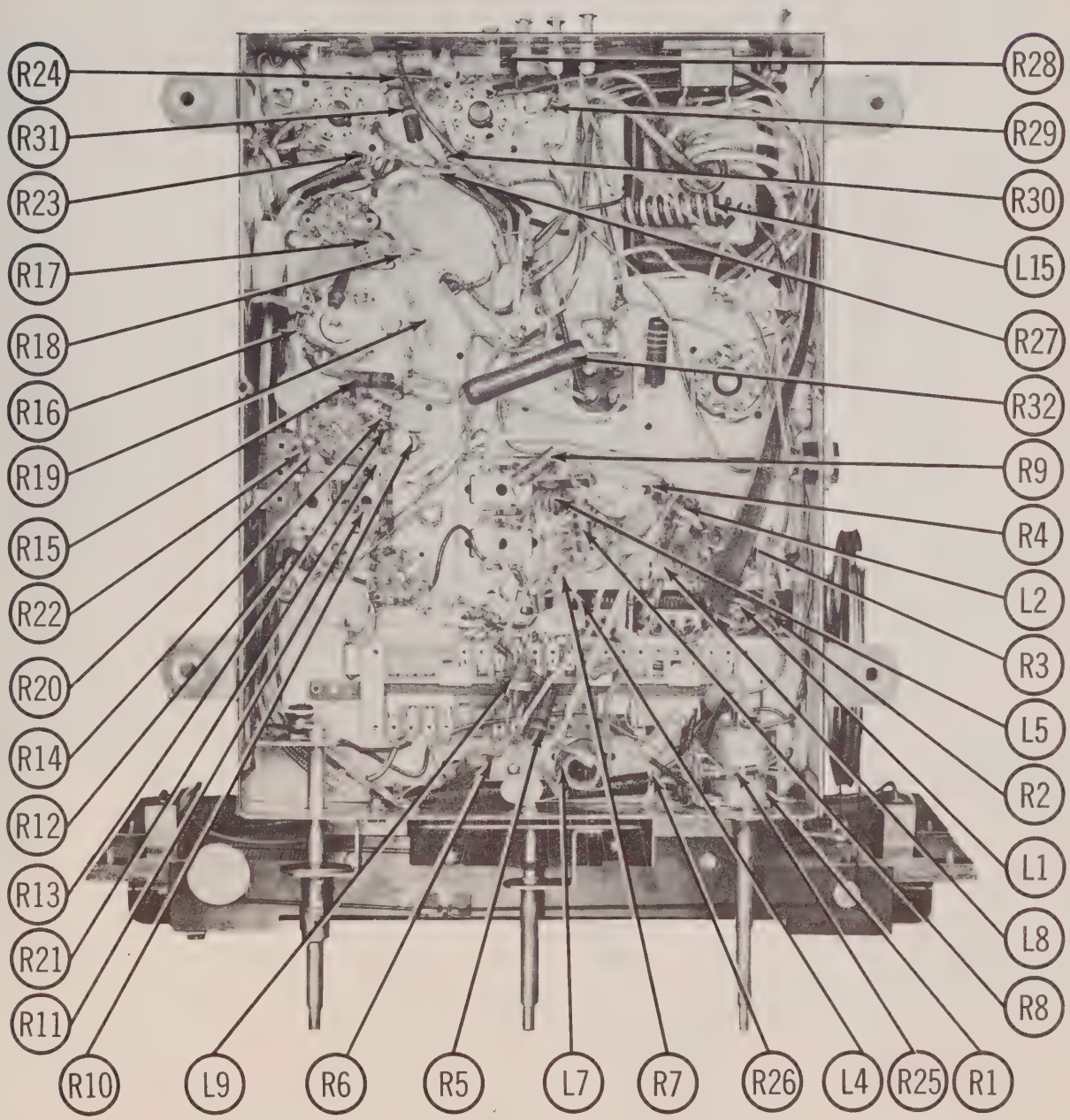
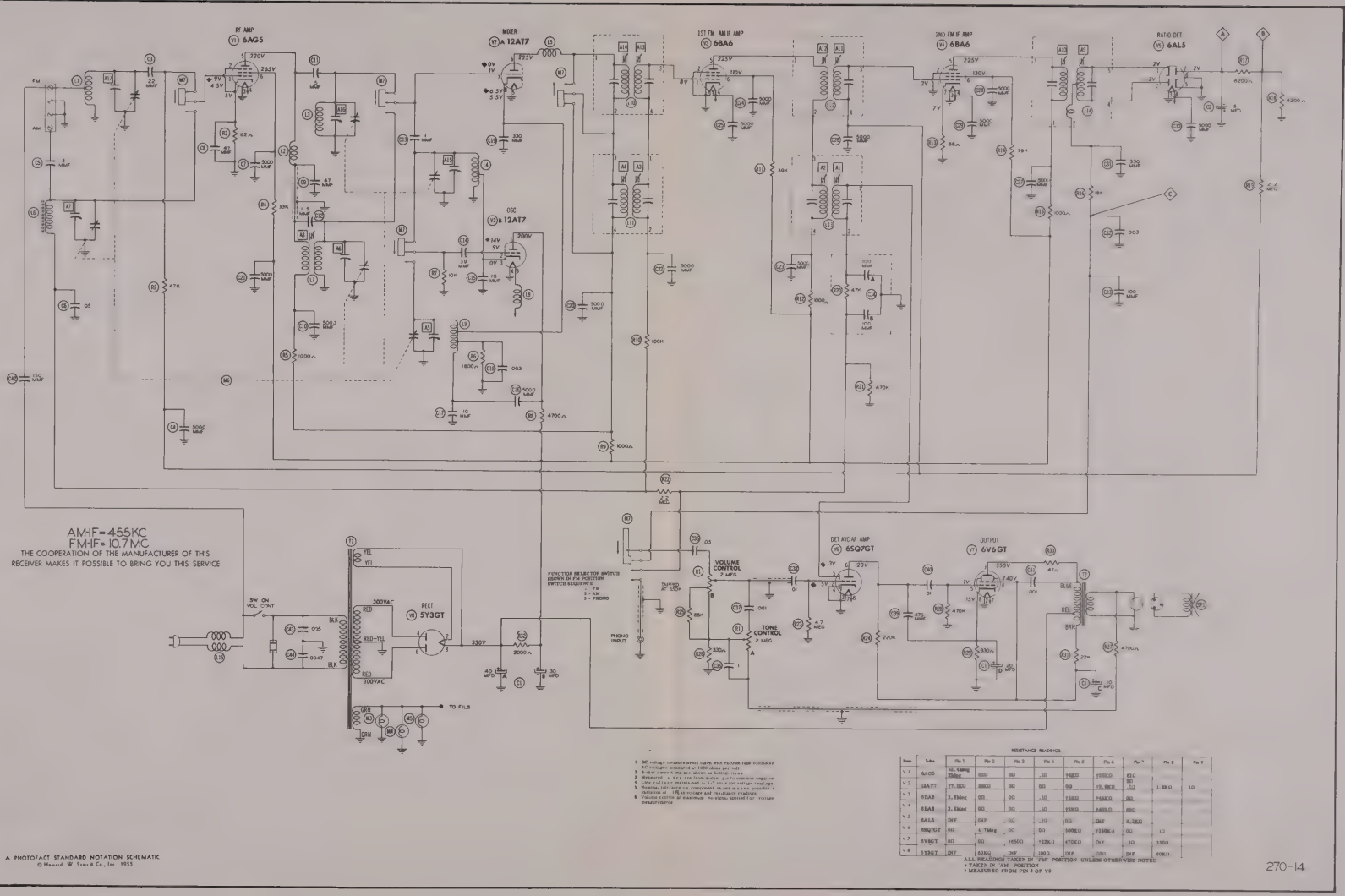


CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



1. DC voltages measured with vacuum tube voltmeter. AC voltages measured at 1000 ohms per volt.
2. Socket numbers are as shown on bottom view.
3. Measured + 115 volt line. Meter set to minimum response.
4. Line voltage maintained at 117 volts for voltage readings.
5. Normal tolerance on components shown is ±20%, unless otherwise specified. ±10% tolerance and resistance readings.
6. Position control at maximum. No signal applied for voltage measurements.

RESISTANCE READINGS

Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AG5	+8.45Meg Filter	820Ω	0Ω	10Ω	195KΩ	820Ω		
V 2	12AT7	27.5KΩ	820Ω	0Ω	0Ω	0Ω	27.5KΩ	820Ω	
V 3	6BA6	1.5Meg	0Ω	0Ω	10Ω	135KΩ	145KΩ	0Ω	
V 4	6BA6	2.5Meg	0Ω	0Ω	10Ω	135KΩ	140KΩ	0Ω	
V 5	6AL5	INF	INF	0Ω	10Ω	INF	INF	0.5MΩ	
V 6	6SQ7GT	0Ω	4.1Meg	0Ω	0Ω	500KΩ	210KΩ	0Ω	10
V 7	6V6GT	0Ω	0Ω	165Ω	122KΩ	470KΩ	INF	10	330Ω
V 8	5Y3GT	INF	80KΩ	INF	100Ω	INF	220Ω	INF	80KΩ

ALL READINGS TAKEN IN "FM" POSITION UNLESS OTHERWISE NOTED
* TAKEN IN "AM" POSITION
† MEASURED FROM PIN 8 OF V3

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.
Disconnect all leads from antenna terminal strip. Allow 15 minute warm-up period for receiver and equipment.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to RF stator lug (middle section of tuning gang). Low side to chassis.	455KC (400~Mod)	AM (Middle Position)	Point of non-interference	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	260MMF	High side to antenna terminal lug. Low side to chassis.	1500KC	"	1500KC	"	A5	Adjust for maximum output.
3.	"	"	"	"	Tune to 1500KC signal	"	A6, A7	"
4.	"	"	600KC	"	Tune to 600KC signal	"	A8	Adjust for maximum output. Repeat steps 3 and 4.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.01MFD	High side to FM RF trimmer lug. Low side to chassis.	10.7MC (Unmod)	FM (Extreme counter clockwise	Point of non-interference	DC probe to point (A). Common to chassis.	A9, A10, A11, A12 A13, A14	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to point (B). Common to point C.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.01MFD	High side to FM RF trimmer lug. Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (A). Low side to chassis.	A9,A10 A11,A12 A13,A14	Disconnect stabilizer capacitor C2. Adjust for curve of maximum amplitude and symmetry as in Fig. 1.
6.	"	"	"	"	"	Vert. Amp. to point (B). Low side to chassis.	A9	Reconnect capacitor C2. Adjust so that 10.7MC occurs at center of crossover lines as in Fig. 2. SLIGHTLY retouch A10 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7.	270Ω Carbon Resistor	High side to FM antenna terminal. Low side to chassis.	108MC	FM	108MC	DC probe to point (A). Common to chassis.	A15	Adjust for maximum deflection.
8.	"	"	106MC	"	Tune to 106MC signal	"	A16 A17	"
	If receiver fails to track properly, the next two steps should be followed.							
9.	270Ω Carbon Resistor	High side to FM antenna terminal. Low side to chassis.	106MC	FM	106MC	DC probe to point (A). Common to chassis.		Adjust for maximum deflection by bending FM RF rotor plates. Recheck A16 and A17.
10.	"	"	88MC	"	88MC	"	L4	Adjust L4 by compressing or expanding for maximum deflection while rocking tuning gang thru 88MC signal.

FIG. 1

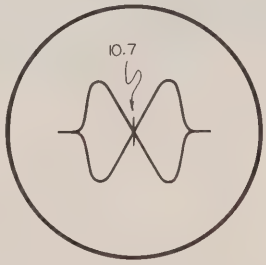


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
V1	RF Amplifier	6AG5	6AG5	7BD	
V2	Osc.-Mixer	12AT7	12AT7	9A	
V3	1st. FM AM IF Amp.	6BA6	6BA6	7BK	
V4	2nd. FM IF Amp.	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	AM Det.-AVC-AF Amp.	6SQ7GT	6SQ7GT	8Q	
V7	Output	6V6GT	6V6GT	7S	
V8	Rectifier	5Y3GT	5Y3GT	5T	

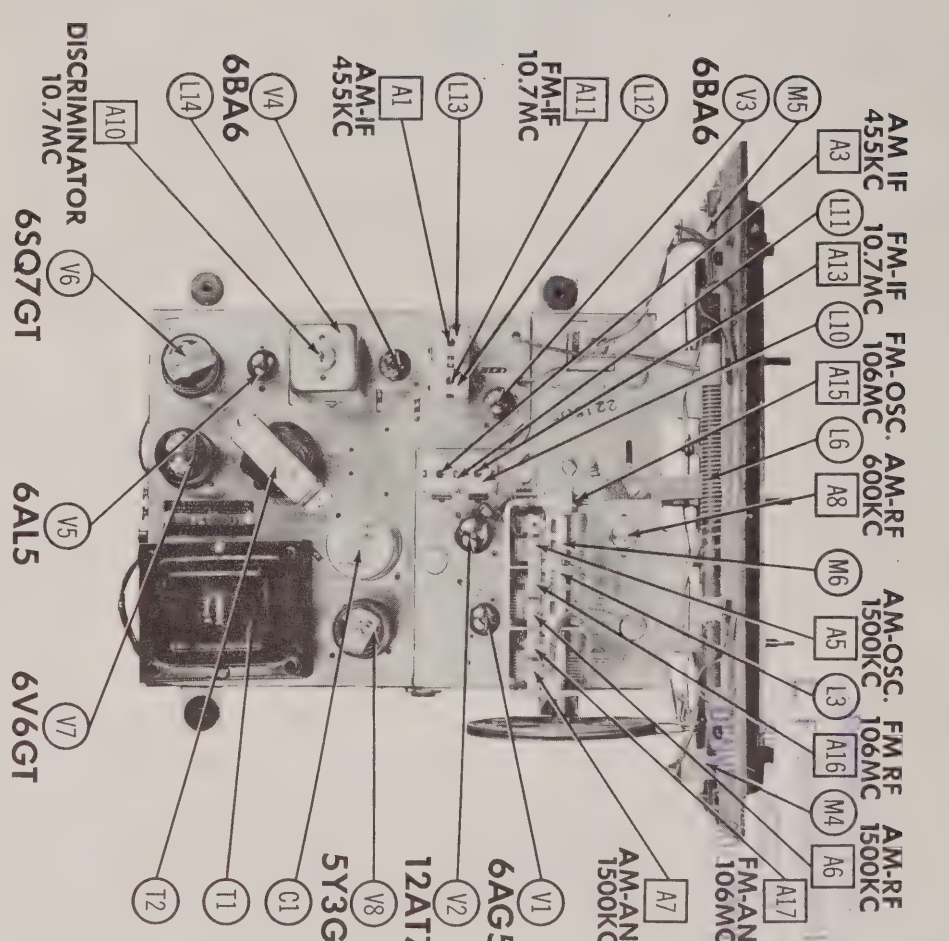
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▲40	450	W505908	AFH4-78		D064		FP429	TVL-4734	
B	■30	450								
C	▲10	450								
D	20	25								
C2	5	50	W504937	PRS150/4		BR550		TC30	TVA-1303	
C3	22		W513406				N470K-220			
C4	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C5	5		W513401	SI5N750	TCN- 5	N011	N750A-050		5TCUB-V5	
C6	.05	200	W512142	P288-05	DF-503	CUB2S5		PT415	2TM-S5	
C7	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C8	47		W513002	SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C9	47		W513002	SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C10	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C11	5		W513401	SI5N750	TCN-5	N011	N750A-050		5TCUB-V5	
C12	1.5		W513033	SI1.5NP0	TCZ-1.5	TZ04	NP0A-1R5	ZT-5515	5TCCB-V15	
C13	1		W513000	SI1NP0	TCZ-1	TZ0 3	NP0A-010		5TCCB-V1	
C14	39		W513409				N220L-390			
C15	10		W513429							
C16	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C17	10		W513442	SI10N750	TCN-10		N750K-100	NT-541	5TCU-Q1	
C18	.003	600	W512310	P688-003	D6-302	CUB6D3	GP2-333-302	PT623	6TM-D3	
C19	330	500	W512541	1468-331	D6-331	5W5T33	GP2K-331	UC-5333	5GA-T33	
C20	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C21	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C22	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C23	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C24	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C25	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C26	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C27	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C28	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C29	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C30	5000		W513013	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C31	330		W513007	SI330	D6-331	TP43	GP2K-331	UC-5333	5GA-T33	
C32	.003	600	W512005	P688-003	D6-302	CUB6D3	GP2-333-302	PT623	6TM-D3	
C33	100		W513003	SI100	D6-101	TP34	GP1K-101	UC-531	5GA-T1	
C34A	100	≈	♦W506338	♦PA-97-1	♦PC-50	♦111TM1	♦1403-01	UC-531 ≈	♦D-1	
B	100							UC-531		
C35	.05	200	W512142	P288-05	DF-503	CUB2S5		PT415	2TM-S5	
C36	.1	200	W512148	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C37	.001	600	W512001	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C38	.01	200	W512009	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C39	470		W513008	SI470	D6-471	TP46	GP2K-471	UC-5347	5GA-T47	
C40	.01	200	W512009	P488-01	D6-103	CUB4S1	GP2-333-103	PT411	4TM-S1	
C41	.001	600	W512001	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C42	150		W513004	SI150	D6-151	TP36	GP2K-151	UC-5315	5GA-T15	
C43	.005	600	W512253	P688-005	D6-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C44	.0047	600	W512253	P688-0047	D6-472	CUB6D47	GP2-333-472	PT6247	6TM-D47	

♦ Items C34A, C34B and R20 are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	2Meg	½	522176	*QJ-613R		F1-67	UF26L	Tone - Panel
B	2Meg	½				R2-74	UR26-T55	Volume tapped at 350KΩ - Rear
C	Switch					KB-1	US-26	Attach to R1B

* CONCENTRIKIT EQUIVALENT: KIT K-2, BASE ELEMENTS & SHAFTS: B11-139 & P2-226 (PANEL)
B13-139X & R1-308 (REAR)
76-1 SWITCH

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R2	47KΩ	½	W510167	BTS-47K	
R3	82Ω	½	W510117	BTS-82	
R4	33KΩ	½	W510164	BTS-33K	
R5	1000Ω	1	W510237	BTA-1000	
R6	1800Ω	½	W510141	BTS-1800	
R7	10KΩ	½	W510155	BTS-10K	
R8	4700Ω	1	W510249	BTA-4700	
R9	1000Ω	½	W510237	BTS-1000	
R10	100KΩ	½	W510173	BTS-100K	
R11	39KΩ	½	W510165	BTS-39K	
R12	1000Ω	1	W510237	BTA-1000	
R13	68Ω	½	W510115	BTS-68	
R14	39KΩ	½	W510165	BTS-39K	
R15	1000Ω	1	W510237	BTA-1000	
R16	18KΩ	½	W510159	BTS-18K	
R17	8200Ω	½	W510153	BTS-8200	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	SILVERTONE PART No.	IRC PART No.	
R18	8200Ω	½	W510153	BTS-8200	
R19	2.2Meg	½	W510193	BTS-2.2Meg	
R20	47KΩ	½	♦W506338	BTS-47K	
R21	470KΩ	½	W510185	BTS-470K	
R22	2.2Meg	½	W510193	BTS-2.2Meg	
R23	4.7Meg	½	W510195	BTS-4.7Meg	
R24	220KΩ	½	W510179	BTS-220K	
R25	68KΩ	½	W510170	BTS-68K	
R26	330Ω	½	W510128	BTS-330	
R27	4700Ω	½	W510148	BTS-4700	
R28	470KΩ	½	W510185	BTS-470K	
R29	330Ω	½	W510128	BTS-330	
R30	47Ω	½	W510113	BTS-47	
R31	22KΩ	1	W510261	BTA-22K	
R32	2000Ω	10	W510732	1 3/4A-2000	

♦ Items R20, C34A and C34B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ⓐ.67A	632VCT .089ADC	5VAC ⓐ2A	6.3VAC ⓐ2.76A	506709	PM-8409 ①			P9311 ①②	24R04 ①

① Drill new mounting holes.
② Tape 6.3V center tap.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	7KΩ	3.2Ω	508486		A-3032				

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	VIKING PART No.	QUAM PART No.	
SP1	12"	PM	3.2Ω	505512	12J11	12A31	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA				NOTES
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	FM Ant. Coil	0Ω		W506353				Tapped
L2	RF choke	3Ω		W507935				3.3Microhenries; IRC part no. CLA
L3	FM RF Coil	0Ω		W506351				
L4	FM Osc. Coil	0Ω		W506352				Tapped
L5	RF Choke	0Ω						
L6	AM Ant. Coil	.5Ω		W522066				
L7	AM RF Coil	80Ω	4.2Ω	W521157	14-1026*	BC-380*	72-A*	Slug No. W506344
L8	Fil. Choke	.8Ω		W507586	19-1000	TV-189	4602	1 Microhenry; IRC part no. CLA
L9	AM Osc. Coil	9Ω		W506335				Tapped at 7Ω & 6.5Ω
L10	1st FM IF	.6Ω	.6Ω	W506080	16-3487	FM-254	1463	
L11	1st AM IF	9Ω	9Ω	W506333	16-6758	BC-352	12-C1	
L12	2nd FM IF	1.7Ω	.5Ω	W505905	16-3487	FM-254	1463	
L13	2nd AM IF	12Ω	12Ω	W505797	16-6758	BC-353	12-C2	
L14	Ratio Det.	.8Ω	.1ΩCT	W506332	17-3487	FM-252■	1453■	Tertiary winding = .1Ω
L15	Line Choke	0Ω		W521153				

* Drill mounting hole.
■ Cut out chassis hole and drill mounting holes.

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	SILVERTONE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	K6215	51-2J	G-AG-J	WC36B	A56U	47	0-2 or S-2	

ASTATIC, SHURE AND ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

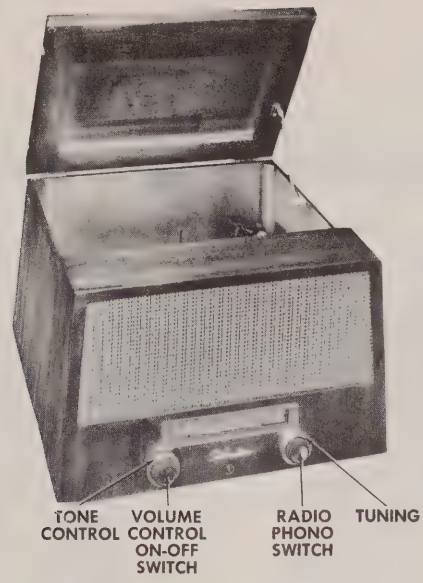
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA				REMARKS
	SILVERTONE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2		*S-652 or †S-642 or ♦S-642D	*B-326 or †B-334 or ♦B-334D	*W-3AGA or †W-3AGS or ♦W-3AGD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Panel Lamp	W118921	#47, Bayonet On-off indicator
M4	Dial Light	W118921	#47, Bayonet
M5	Dial Light	W118921	#47, Bayonet
M6	Tuning Cap.	W522070	20-375MMF, 20-375MMF, 20-180MMF
M7	Switch	W506347	AM-FM-Phono
M8	Switch	K467	
M9	Phono Motor	K5686	
A15	Trimmer Cap.		FM Osc. (3-30MMF)
	Cabinet	W522040	
	Knob	W522480	Rear section of bandswitch
	Knob	W522059	Front section of bandswitch
	Knob	W522062	Tone & rear section of tuning
	Knob	W522057	On-off-volume & front section of tuning
	Name Emblem	W522092	
	Dial Pointer	W522104	
	Dial Scale	W522099	
	Dial Background	W522065	

SILVERTONE MODELS 4045A, B, C, 4046A, B, C (Ch. 528.312, -1)



DENVER, COLORADO

TRADE NAME	Silvertone Models 4045A, B, C, 4046A, B, C (Ch. 528.312, -1)
SUPPLIER	Sears Roebuck & Co., 925 S. Homan, Chicago, Ill.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver
TUBES (Six)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 12AT6 Phase Inv., (2) 35C5 Output
POWER SUPPLY	110-120 Volts AC-60 Cycles — RATING .31 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540KC-1630KC

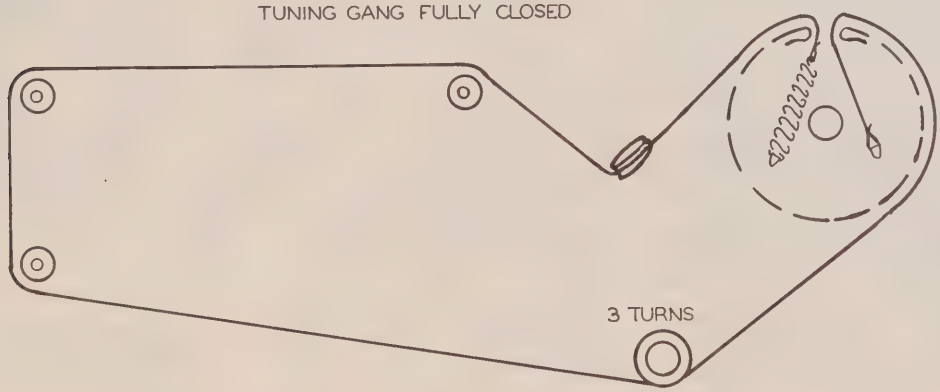
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12BE6 (V1). Low side to chassis.	455KC (400∿Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	"	1630KC	"	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

RECORD CHANGER UNIT - SILVERTONE CHASSIS MODEL 488.216-13

TUNING GANG FULLY CLOSED



DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
V4	Phase Inverter	12AT6	12AT6	7BT	
V5	Output	35C5	35C5	7CV	
V6	Output	35C5	45C5	7CV	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	T18-304	PRS150/50-30		BBRD5315		TCD497	TVA-2450	Red
B	30	150								Yellow
C2	.05	200	T16-197	P288-05	DF-503	CUB2S5		PT415	2TM-S5	
C3	47		T15-299	SI4TN750	TCN-47	N033	N750L-470	NT-5447	5TCU-Q47	
C4	.05	200	T16-197	P288-05	DF-503	CUB2S5		PT415	2TM-S5	
C5	150		T15-221	BPD-151	D6-151	G046	811-151	UC-5315	5GA-T15	
C6	.05	400	T16-189	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C7	25	500	T15-256	1468-250	D6-250	5W5Q25	GP1K-250	MC220	1FM-425	
C8	.02	400	T16-150	P488-02	DF-203	CUB4S2	817-02	PT412	4TM-S2	
C9	20000		T15-240	BPD-02	DF-203	CUB4S2	817-02	PT412	5HK-S2	
C10	.003	600	T16-200	P688-003	D6-302	CUB6D3	GP2-333-302	PT623	6TM-D2	
C11A	10000									
B	250		♦T17-110	♦PA-112-4	♦PC-81	♦113TM2	♦1404-02		♦T-2	
C										
C12	.1	400	T16-203	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C13	5000		T16-177	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	Note 1
C14A	10000									
B	250		†T17-110	†PA-112-4	†PC-81	†113TM2	†1404-02		†T-2	
C										
C15	.001	600	T16-254	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C16	.001	600	T16-254	P688-001	D6-102	CUB6D1	GP2L-102	PT621	6TM-D1	
C17	.047	400	T16-245	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C18	.05	400	T16-189	P488-05	DF-503	CUB4S5		PT415	4TM-S5	

Note 1. Omitted in Ch. 528.312.
♦ Items C11A, C11B, C11C, R8A, R8B are combined in one unit.
When replacing items separately, C11B and C11C should total 250MMF.
† Items C14A, C14B, C14C, R10A, R10B are combined in one unit.
When replacing items separately, C14B and C14C should total 250MMF.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500KΩ	½	A24-209			F1-40	UF55L	Tone - Panel
B	1Meg					R2-61	UR16-T1253	Volume - tapped @ 90KΩ-Rear
C	Switch					KB-1	US-26	Attach to R1B

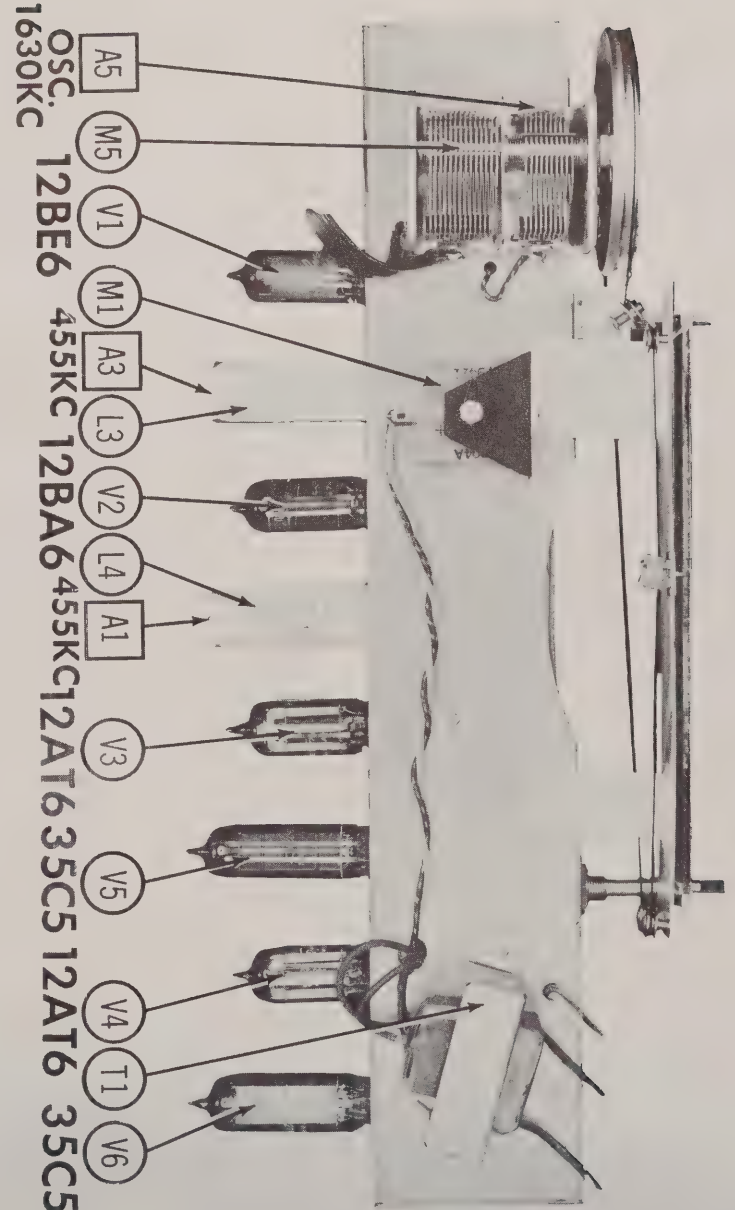
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R2	22KΩ	½	T60-659	BTS-22K	
R3	82Ω	½	T60-776	BTS-82	
R4	47KΩ	½	T60-730	BTS-47K	
R5	1Meg	½	T60-668	BTS-1Meg	
R6	22KΩ	½	T60-659	BTS-22K	
R7	10Meg	½	T60-728	BTS-10Meg	
R8A	500KΩ	½	♦T117-110	BTS-500K	
B	250KΩ	½		BTS-250K	
R9	10Meg	½	T60-728	BTS-10Meg	Note 1

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: SILVERTONE PART No.	IRC PART No.	NOTES
R10A	500KΩ	½	†T17-110	BTS-500K	
B	250KΩ	½		BTS-250K	
R11	220KΩ	½	T60-667	BTS-220K	
R12	100Ω	½	T60-752	BTS-100	
R13	100KΩ	½	T60-727	BTS-100K	
R14	1200Ω	1	T60-926	BTA-1200	
R15	39Ω	½	T60-930	BTS-39	
R16	33Ω	3	T60-958		
R17	220KΩ	½	T60-667	BTS-220K	
R18	10KΩ	½	T60-728	BTS-10K	Note 1

Note 1. In chassis 528.312, R9 is omitted and R18 is added from pin 2 of V4 to ground.
♦ Items R8A, R8B, C11A, C11B, C11C are combined in one unit.
† Items R10A, R10B, C14A, C14B, C14C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA: SILVERTONE PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	5.6KΩ CT	6.8Ω	80-295	A-3823	A-2901	S-53X	Z1007	22S61	

SPEAKER

ITEM No.	RATINGS SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3.4Ω	79-417	ST-108 Mod. P6-X	6A1	
SP2	6"	PM	3.4Ω	79-417	ST-108 Mod. P6-X	6A1	

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	.2Ω		T82-72				
L2	Osc. Coil	.9Ω	8Ω	T10-645	14-1074	BC-381*	70-OSC	
L3	Input IF	20Ω	20Ω	T10-508	16-6758	BC-352	12-C1	
L4	Output IF	21Ω	21Ω	T10-479	16-6758	BC-353	12-C2	

* Drill mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA: SILVERTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.082ADC	83-780	1004A	RS-100	6S100	100	5M1	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M2	K5799					47	0-1 or S-1 & 0-3	

ELECTRO-VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW

PHONO NEEDLE

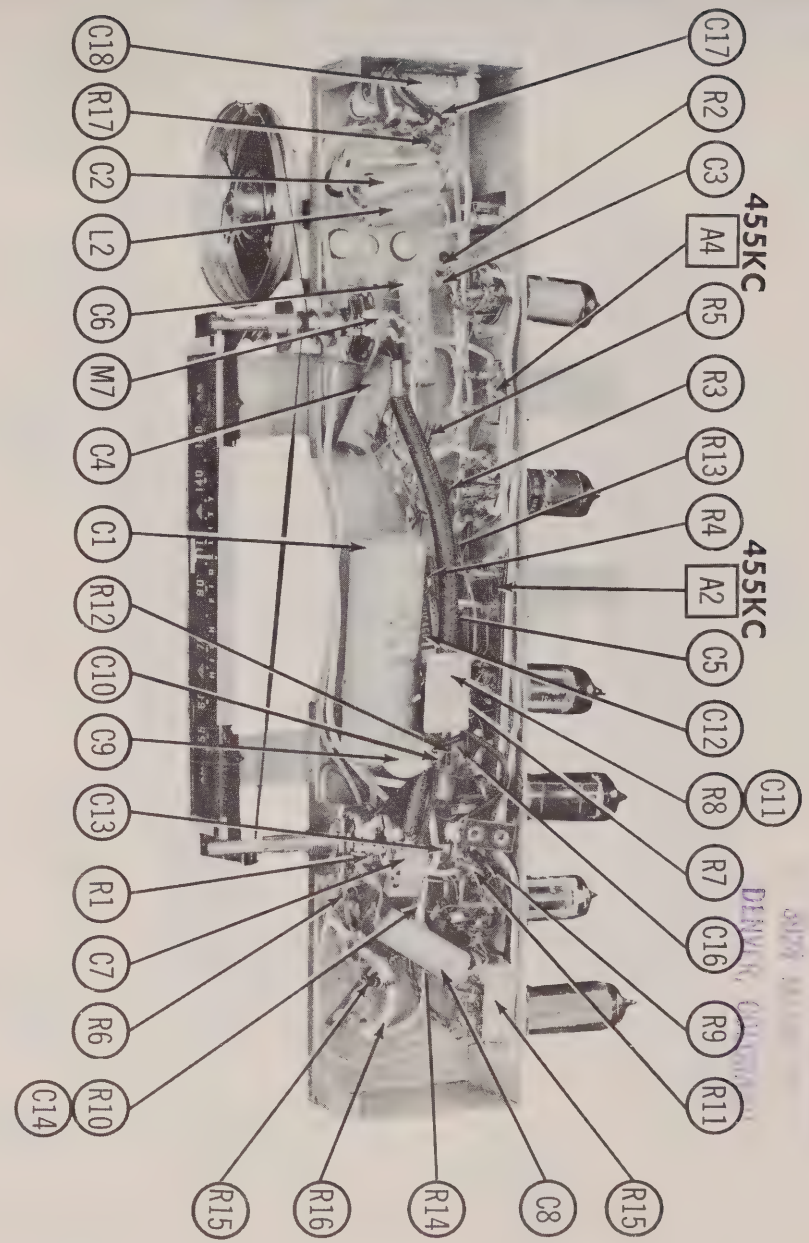
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	REMARKS
M3	5742	†S-66 or †♦S-66SD or ♦S-66D	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D	†W-75TPS or †♦W-75DS or ♦W-75TPD	† Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M4	Dial Light	T89-11	#49, Bayonet
M5	Tuning Cap.	T19-231	11-475MMF, 15-185MMF
M6	Switch	K467	On-off-record changer
M7	Switch	T69-196	Radio-phono
	Cabinet	T42-632	Model 4045A (Mahogany)
	Cabinet	T42-688	Model 4045B, C (Mahogany)
	Cabinet	T42-635	Model 4046A (Limed Oak)
	Cabinet	T42-689	Model 4046B, C (Limed Oak)
	Dial Scale	T67-577	
	Dial Pointer	T58-98	

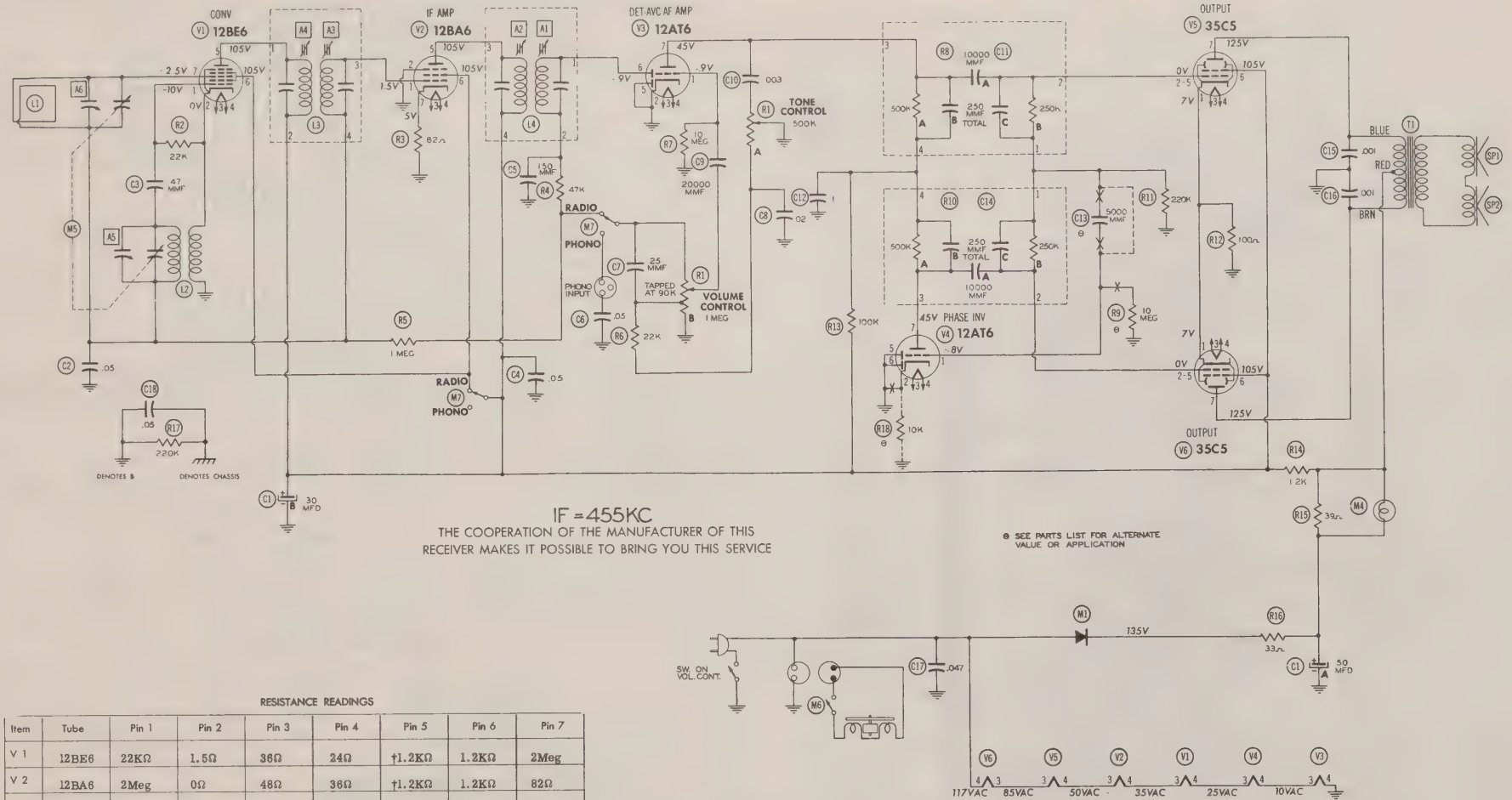
CHASSIS—BOTTOM VIEW



SET 270 FOLDER 15

SILVERTONE 4045 (Ch. 528.312, -1)

SILVERTONE 4045A (Ch. 528.312, -1)



IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	1.5Ω	36Ω	24Ω	†1.2KΩ	1.2KΩ	2Meg
V 2	12BA6	2Meg	0Ω	48Ω	36Ω	†1.2KΩ	1.2KΩ	82Ω
V 3	12AT6	10Meg	0Ω	12Ω	0Ω	0Ω	1Meg	†600KΩ
V 4	12AT6	10Meg	0Ω	24Ω	12Ω	0Ω	0Ω	†600KΩ
V 5	35C5	100Ω	470KΩ	85Ω	48Ω	470KΩ	†1.2KΩ	†210Ω
V 6	35C5	100Ω	470KΩ	120Ω	85Ω	470KΩ	†1.2KΩ	†210Ω

† MEASURED FROM OUTPUT OF SELENIUM RECTIFIER (M1)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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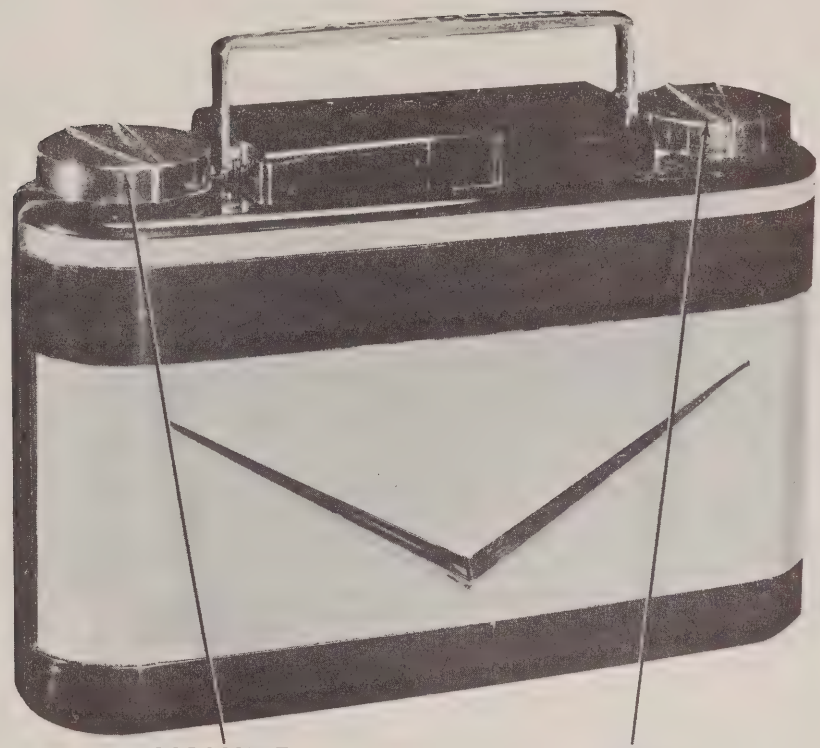
STROMBERG-CARLSON
MODEL EP-2



STROMBERG-CARLSON
MODEL EP-2

TRADE NAME	Stromberg-Carlson Model EP-2
MANUFACTURER	Stromberg-Carlson Co., Service Dept., 302 N. Goodman St., Rochester, N.Y.
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (or) 3 Volts "A" Supply & 75 Volts "B" Supply
RATING	.13 Amp. @ 117 Volts AC (or) 175MA @ 3 Volts DC & 13MA @ 75 Volts DC
TUNING RANGE—BROADCAST	540KC-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~Mod)	Point of non-interference at mid-freq.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1620KC	Tuning gang fully open	"	A5	"
3.		Loop	1400KC	Tune to 1400KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

STROMBERG-CARLSON
MODEL EP-2

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RETMA BASE TYPE	NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF Amp.	1U5	1U5	6BW	
V4	Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stromberg-Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	111116	AFH3-64		BBRT4415 X25			R1392	Red
B	40	150								Blue
C	250	10								Yellow
C2	20000		110773	BPD-02	DF-203	K085	817-02		5HK-S2	
C3	47		110695	SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C4	10000		110672	BPD-01	DD-103	K082	811-01	DC-511	5HK-S1	
C5	.1	200	110705	P288-1	DF-104	CUB2P1		PT401	2TM-P1	
C6	5.5		110665							
C7	.005	400	110419	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C8A	150									
B	2000									
C	10000		♦128205	♦PA-136C	♦PC-165				♦DP-1	
D	150									
E	5000									
C9	2000		110840	BPD-002	DD-202	K072	801-002	DC-522	5HK-D2	
C10	.047	400		P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C11	.22	200		P288-22		CUB2P22		PT4022	2TM-P22	Note 1
C12	.047	200	110703	P288-047	DF-503	CUB2S47		PT4147	2TM-S47	

♦ Items C8A, C8B, C8C, C8D, C8E, R8A, R8B, R8C, R8D are combined in one unit.
Note 1. Not used in all versions.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg-Carlson PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	145181	Q13-139	A47-2Meg-Z	B-76-S	U-55	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Not Req.	Attach to R1A
C	Switch		Not Req.	76-2	SWE-20	Not Req.	US-27	Attach to R1A

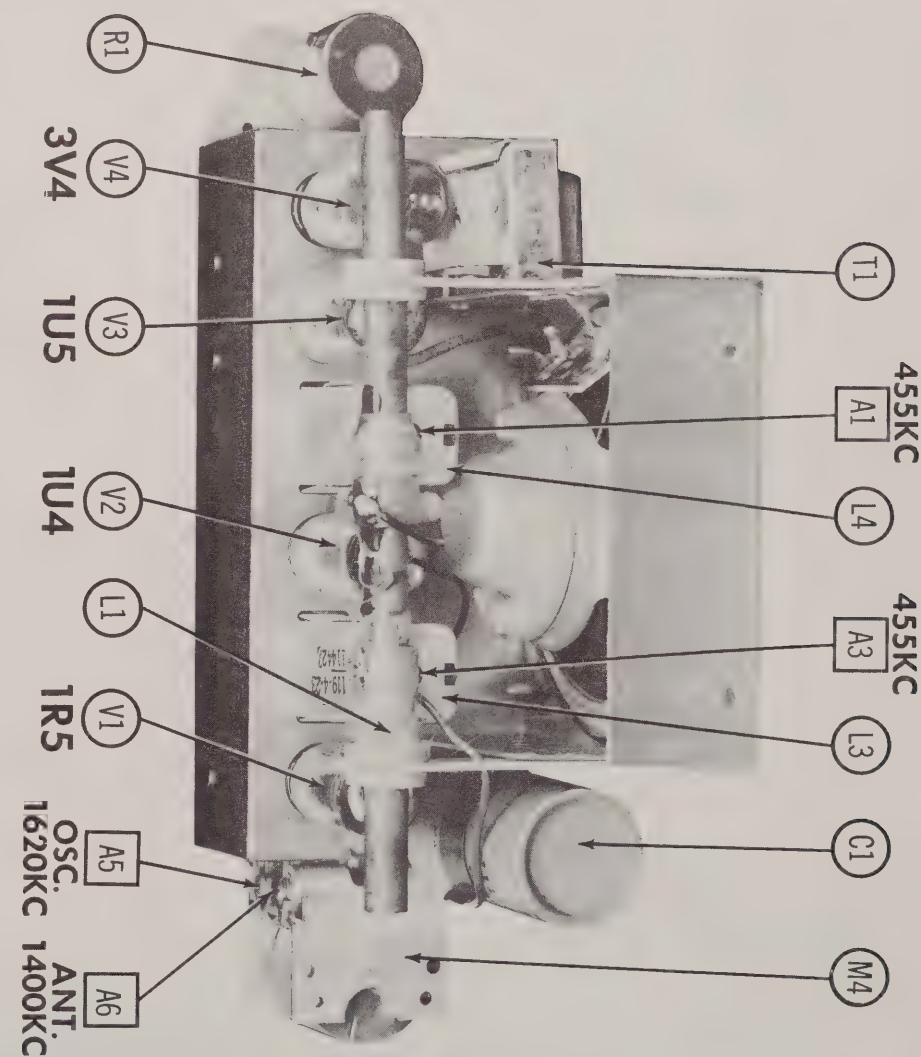
RESISTORS

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R2	100KΩ	½	149113	BTS-100K	
R3	15KΩ	½	149108	BTS-15K	
R4	1500Ω	½	149102	BTS-1500	
R5	470Ω	½	149099	BTS-470	
R6	10Meg	½	149125	BTS-10Meg	
R7	4.7Meg	½	149123	BTS-4.7Meg	
R8A	10Meg	½		BTS-10Meg	
B	4.7Meg	½	♦128205	BTS-4.7Meg	
C	1Meg	½		BTS-1Meg	
D	3.3Meg	½		BTS-3.3Meg	

ITEM No.	RATING: OHMS	RATING: WATT	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: IRC PART No.	NOTES
R9	1000Ω	½	149101	BTS-1000Ω	
R10	220KΩ	½	149115	BTS-220K	
R11	1500Ω	½	149102	BTS-1500	
R12	27Ω	½	28139	BTS-27	
R13	390Ω	½	28153	BTS-390	
R14	430Ω	½	149467	BTS-430	
R15	3300Ω	½	149104	BTS-3300	
R16	2000Ω	7	149442		
R17	150Ω	2	149469		

♦ Items R8A, R8B, R8C, R8D, C8A, C8B, C8C, C8D and C8E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T1	9.8KΩ	3.3Ω	161272	A-3329	A-2927 ①	S-11X		24S49	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Stromberg-Carlson PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	3.3Ω	155887 155289 ①	35J6	3A07	① Alternate PM speaker

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Ant. Coil	1.2Ω		139060				
L2	Osc. Coil	8.5Ω		114136			70-OSC *	Tapped @ 7Ω
L3	Input IF			114427	16-6758	BC-352	12-C1	
L4	Output IF			114427	16-6758	BC-353	12-C2	

† Use secondary winding only.

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT	REPLACEMENT DATA Stromberg-Carlson PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	MALLORY PART No.	RADIO RECEPTOR PART No.	SARKES TARZIAN PART No.	NOTES
M1	.060ADC	162190	1263A	RS65	6S65	8J1	65	

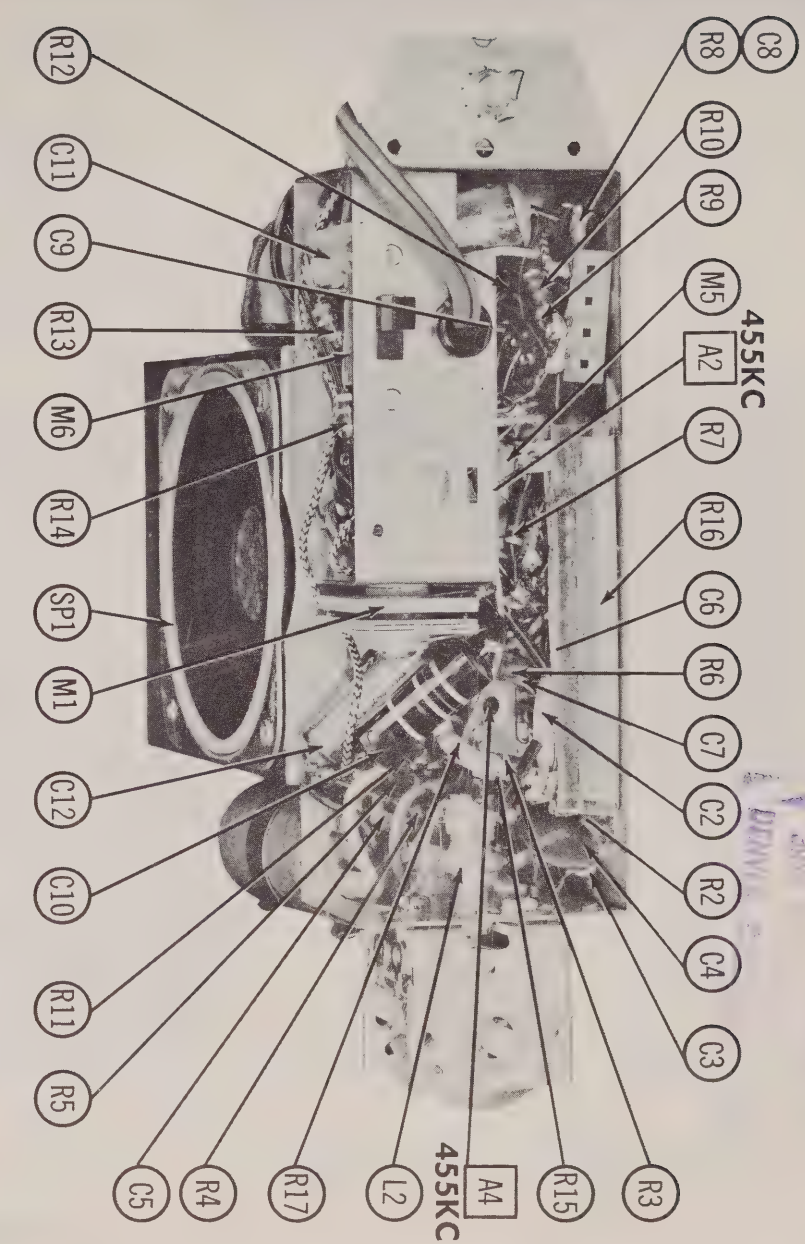
BATTERIES

ITEM No.	VOLTAGE	Stromberg-Carlson PART No.	REPLACEMENT DATA EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	BURGESS "A"	BURGESS "B"	BURGESS "A-B"	INSTALLATION NOTES
M2 M3	1.5V "A" 75V "B"	Battery Kit No. 141037	964 †	437		2IR †	XX50		† Connect 2 in series

MISCELLANEOUS

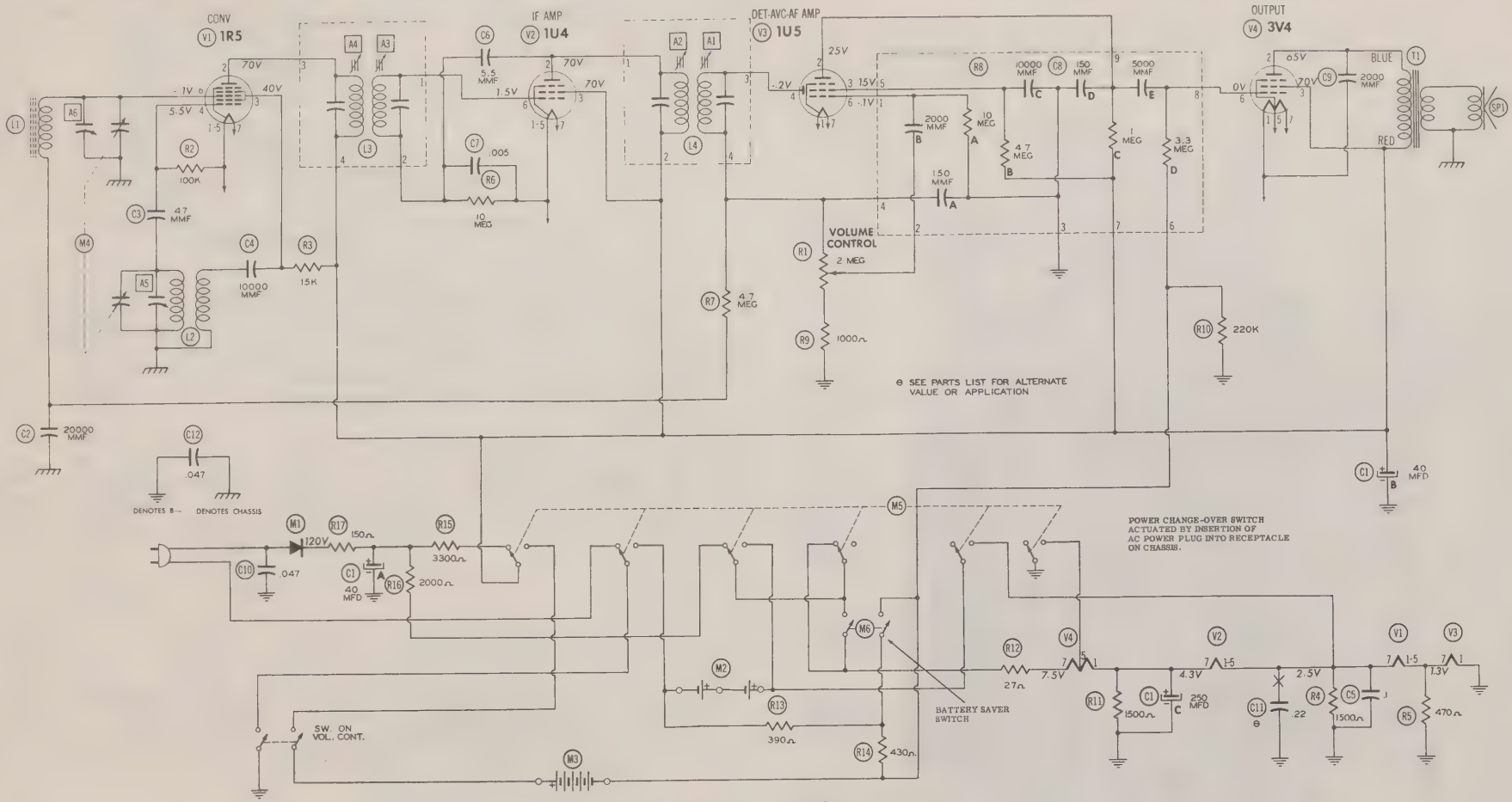
ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M4	Tuning Cap.	110057	25-250MMF, 20-120MMF
M5	Switch	158051	Change-over
M6	Switch	158052	Battery Saver
	Knob	134235	On-off-volume
	Handle	132242	
	Cabinet	108415	Jade Black
	Cabinet	108416	Spruce Green
	Cabinet	108417	Suede Brown
	Cabinet	108418	Lemon Peel
	Cabinet	108419	Terra Cotta
	Cabinet	108420	Antique White
	Carrying Case	108412	

CHASSIS—BOTTOM VIEW



STROMBERG-CARLSON
MODEL EP-2

STROMBERG-CARLSON
MODEL EP-2



IF=455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†3.4KΩ	†15KΩ	100KΩ	*	6.8Meg	*
V 2	1U4	*	†3.4KΩ	†3.4KΩ	INF	*	10Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	2.1Meg	*	10Meg	*
V 4	3V4	*	†3.6KΩ	†3.4KΩ	INF	*	3.3Meg	*

† MEASURED FROM OUTPUT OF M1

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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V-M
MODEL 556

PROPERTY OF
C. F. TECHNICIAN
DENVER

V-M
MODEL 556

TRADE NAME	V-M Model 556
MANUFACTURER	V-M Corp., Benton Harbor, Michigan
TYPE SET	AC Operated 2 Channel Audio Amplifier With 3 Speed Automatic Record Changer
TUBES (Four)	Types 12AX7 AF Amp.-Phase Inverter, (2) 6V6GT Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .43 Amp. @ 117 Volts AC

RECORD CHANGER UNIT V-M MODEL 954

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		V-M PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier-Phase Inverter	12AX7	12AX7	9A	
V2	Output	6V6GT	6V6GT	7S	
V3	Output	6V6GT	6V6GT	7S	
V4	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	V-M PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▰20	450	12011	AFH4-14		D013		FP444	TVL-4763	
B	■20	450								
C	▲20	450								
D	20	450								
C2	.047	400	12009	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C3	.047	400	12009	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C4	.0022	600	12049	P688-0022	D6-222	CUB6D22		PT6222	6TM-D22	
C5	.0022	600	12049	P688-0022	D6-222	CUB6D22		PT6222	6TM-D22	
C6	.047	400	12009	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	
C7	.047	400	12009	P488-047	DF-503	CUB4S47		PT4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	500KΩ	½	11976	Q13-133	A47-500K-Z	BSK-60	U-48	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Not Req.	Attach to R1A
R2A	1Meg	½	11975	Q11-137			UF16L	Tone
B	1Meg	½		M11-137			UR16L	
C	Shaft			Not Req.			DS-36	Attach to R2A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	V-M PART No.	IRC PART No.	
R3	5.6Meg	½	11633	BTS-5.6Meg	
R4	3900Ω	½	10873	BTS-3900	
R5	220KΩ	½	11293	BTS-220K	
R6	22KΩ	½	11053	BTS-22K	
R7	22KΩ	½	11053	BTS-22K	
R8	1Meg	½	11453	BTS-1Meg	
R9	1000Ω	½	10733	BTS-1000	

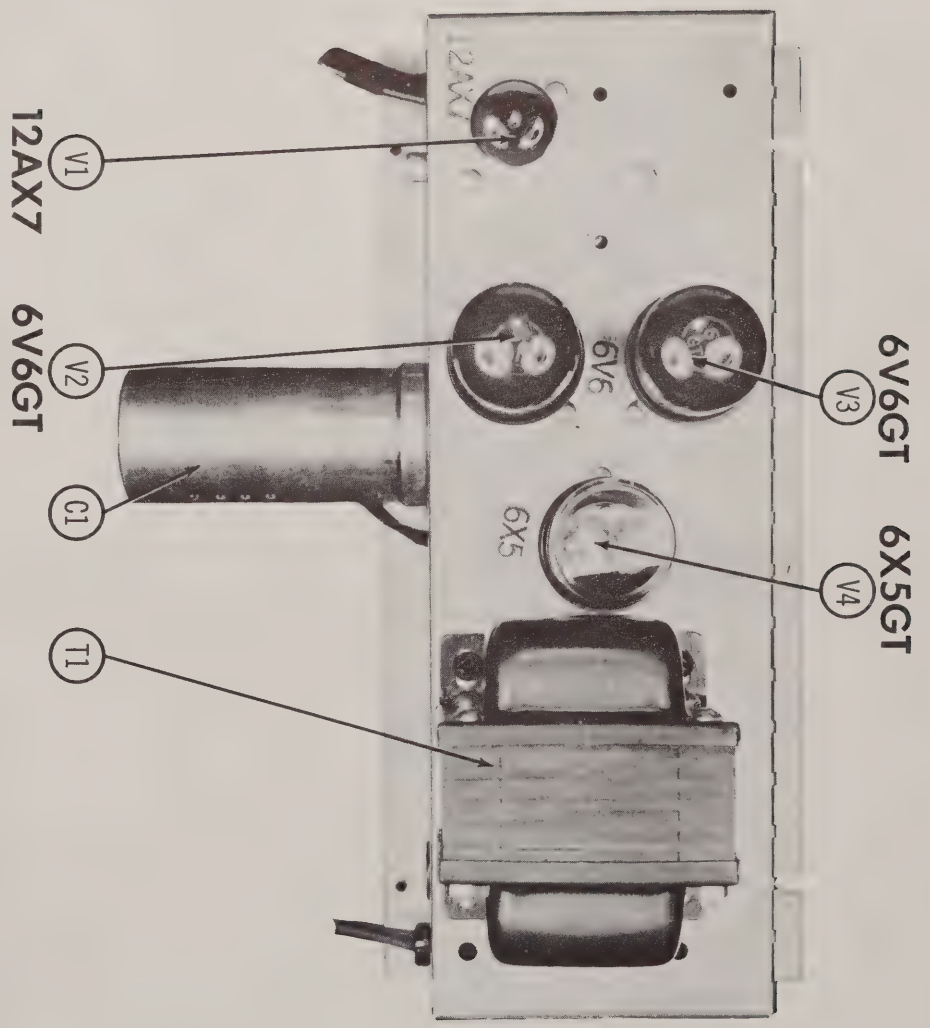
ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	V-M PART No.	IRC PART No.	
R10	220KΩ	½	11293	BTS-22K	
R11	220KΩ	½	11293	BTS-220K	
R12	470KΩ	½	11373	BTS-470K	
R13	200Ω	5	11979	PW7-200	
R14	470KΩ	½	11373	BTS-470K	
R15	10KΩ	½	10973	BTS-10K	
R16	100KΩ	½	11213	BTS-100	
R17	470Ω	2	10655	BTB-470	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	V-M PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ⓐ.43A	532VCT .067ADC	6.3VAC ⓐ1.9A		12516-6	PC-8403①			P9204 ②	26R31U

① Drill one new mounting hole.
② Tape 5V winding.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	V-M PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	7KΩ CT	500Ω tap @ 16Ω, 8Ω, 4Ω	12515					26S59	

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	V-M PART No.	JENSEN PART No.	QUAM PART No.	
SP1	8"	PM	3.5Ω	7129		8A10Z3.2	
SP2	3"	PM	14.5Ω	7130			

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	V-M PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	5799	55-T	GDJ			47	0-1 or S-1 & 0-3	

ASTATIC AND ELECTRO-VOICE NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENT SEE BELOW.

PHONO NEEDLE

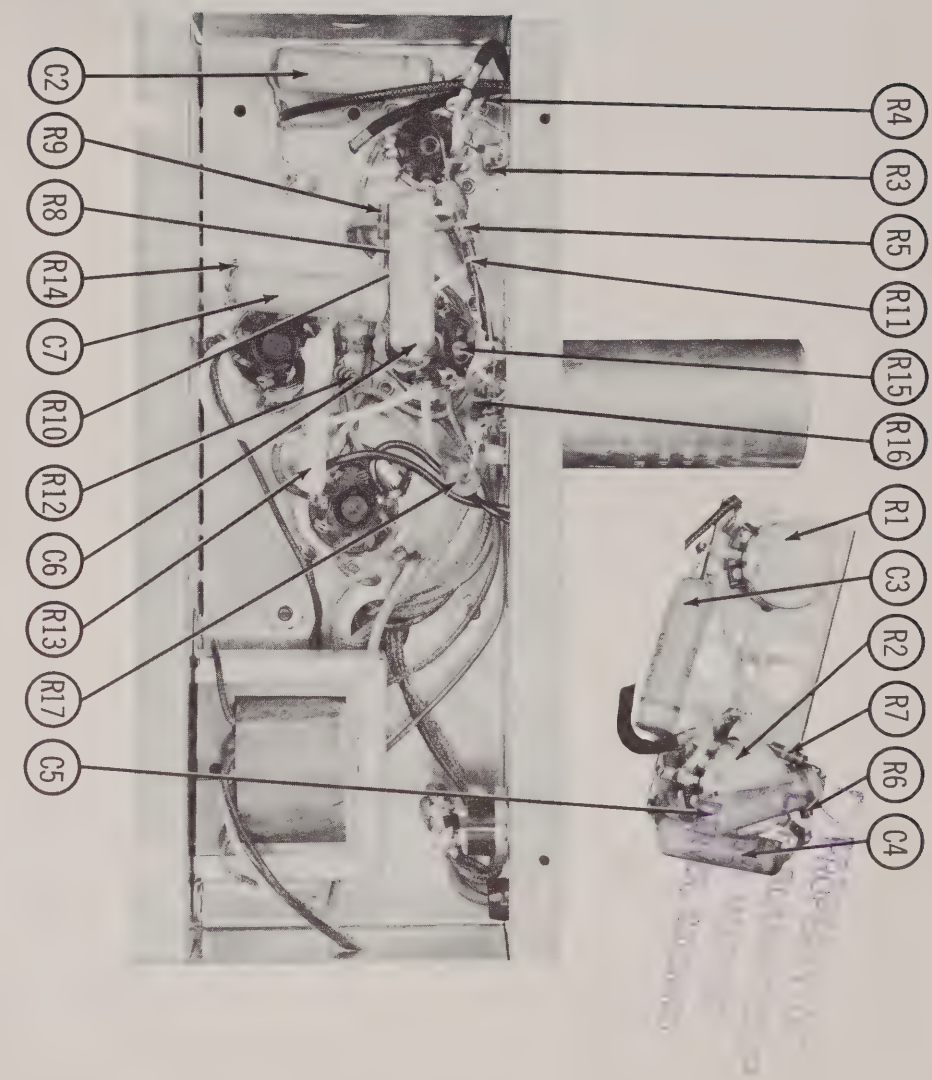
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

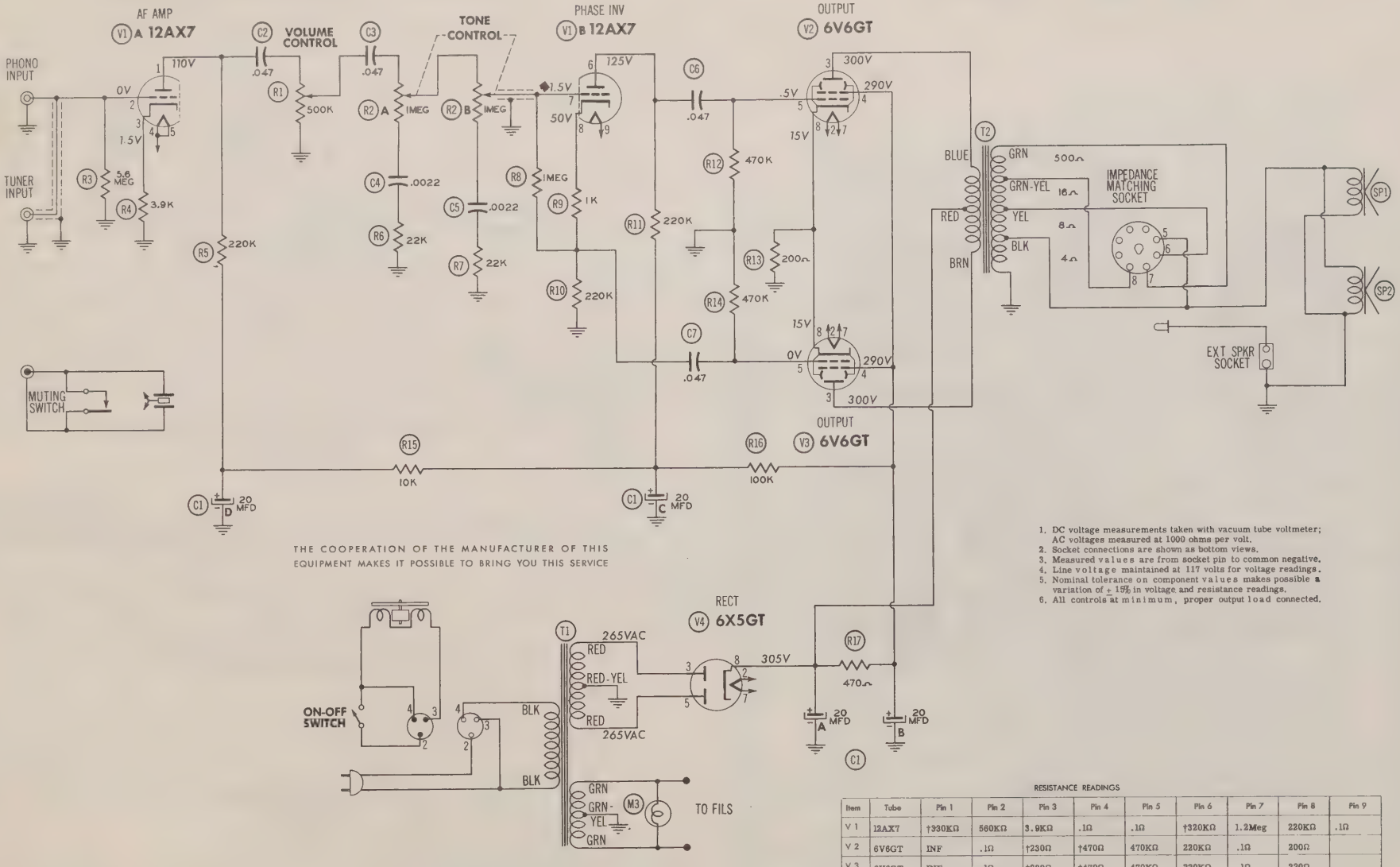
ITEM No.	REPLACEMENT DATA				REMARKS
	V-M PART No.	JENSEN PART No.	PERMO PART No.	WALCO PART No.	
M2		†S-66 or ♦†S-66SD	†AC-434 or ♦†AC-434D1 or †♦AC-434D2 or ♦AC-434D	†W-75TPS or ♦†W-75DS or ♦W-75TPD	†Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	V-M PART No.	NOTES
M3	Panel Light	4654	#47, Bayonet
M4	Phono Motor	7340	
M5	Switch	467	On-off
M6	Switch	4811	Muting Assy.
	Case	6847	Brown
	Case	6994	Rose & Gray
	Knob	5868	Tone & volume
	Knob	4433-G	Reject
	Knob	4476	Speed control
	Lucite Rod	7131	Lazy Light

CHASSIS—BOTTOM VIEW





THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AX7	†330KΩ	560KΩ	3.9KΩ	.1Ω	.1Ω	†320KΩ	1.2Meg	220KΩ	.1Ω
V 2	6V6GT	INF	.1Ω	†230Ω	†470Ω	470KΩ	220KΩ	.1Ω	200Ω	
V 3	6V6GT	INF	.1Ω	†230Ω	†470Ω	470KΩ	220KΩ	.1Ω	220Ω	
V 4	6X5GT	INF	.1Ω	115Ω	INF	125Ω	INF	.1Ω	3Meg	

♦ MEASURED FROM PIN 8 OF V1
† MEASURED FROM PIN 8 OF V4

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MODEL H-871TU21

WESTINGHOUSE MODELS H-838K21B, H-838KU21B, H-841T21, H-841TU21, H-842T21, H-842TU21, H-843K21, H-843KU21, H-844K21, H-844KU21, H-847K21, H-847KU21, H-848K21, H-848KU21, H-861T21, H-861TU21, H-862T21, H-862TU21, H-863T21, H-863TU21, H-864T21, B, H-864TU21, B, H-865T21, B, H-865TU21, B, H-866T21, B, H-866TU21, B, H-867T21, H-867TU21, A, H-868T21, H-868TU21, A, H-871T21, H-871TU21, H-872T21, H-872TU21 (Ch. V-2313-15, -25, -35, V-2323-101, -122, -124, -201, -301)

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RETMA MEMBER

PROFESSOR
L. F. BLANKENSHIP
3924 [illegible]
[illegible], COLORADO

WESTINGHOUSE MODEL H-871TU21 (Ch. V-2323-201)

TRADE NAME	Westinghouse	MODELS	CHASSIS
		H-838K21B, H-841T21, H-842T21, H-843K21, H-844K21, H-847K21, H-848K21, H-861T21, H-862T21, H-863T21, H-864T21, H-865T21, B, H-866T21, B, H-867T21, H-868T21, H-871T21, H-872T21	V-2313-15, -25, -35
		H-838KU21B, H-841TU21, H-842TU21, H-843KU21, H-844KU21, H-847KU21, H-848KU21, H-861TU21, H-862TU21, H-863TU21, H-864TU21, B, H-865TU21, B, H-866TU21, B, H-867TU21, A, H-868TU21, A, H-871TU21, H-872TU21	V-2323-101, -122, -124, -201, -301
MANUFACTURER	Westinghouse Electric Corp., Television & Radio Div., Metuchen, N. J.		
TYPE SET	Television Receiver		
TUBES	Twenty-three		
POWER SUPPLY	110-120 Volts AC - 60 Cycles	RATING 1.72 Amp. @ 117 Volts AC	
TUNING RANGE -	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

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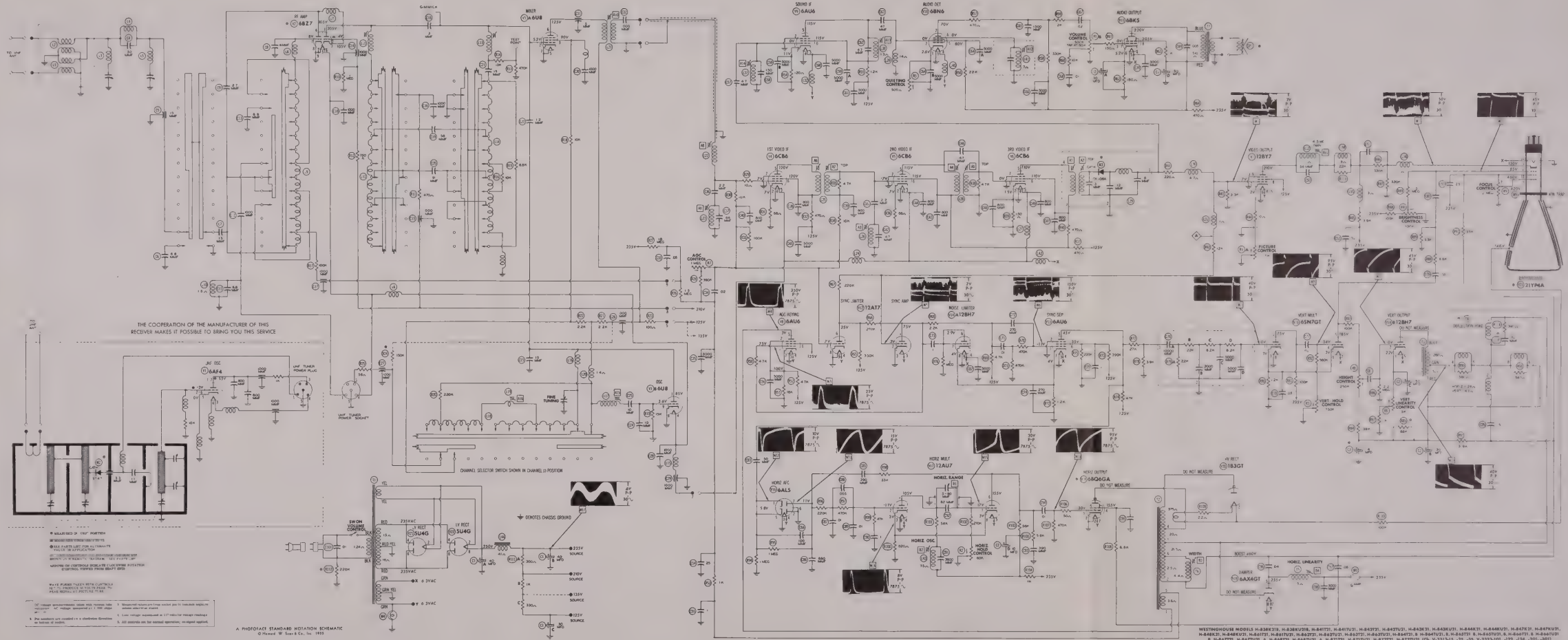
DATE 3-55 SET 270 FOLDER 18


THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1955
DENOTES CHASSIS GROUND
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
WESTINGHOUSE MODELS H-838K21B, H-838KU21B, H-841T21, H-841TU21, H-842T21, H-842TU21, H-843K21, H-843KU21, H-844K31, H-844KU21, H-847E21, H-847KU21, H-848K21, H-848KU21, H-861T21, H-861TU21, H-862T21, H-862TU21, H-863T21, H-863TU21, H-864T21, H-864TU21, B, H-865T21, B, H-865TU21, B, H-866T21, B, H-866TU21, B, H-867T21, H-867TU21, A, H-868T21, H-868TU21, A, H-871T21, H-871TU31, H-872T21, H-872TU21 (Ch. V-2313-13, -25, -35, V-2323-101, -122, -124, -201, -301)

WESTINGHOUSE MODELS H-838K21B, H-838KU21B, H-841T21, H-841TU21, H-842T21, H-842TU21, H-843K21, H-843KU21, H-844K31, H-844KU21, H-847E21, H-847KU21, H-848K21, H-848KU21, H-861T21, H-861TU21, H-862T21, H-862TU21, H-863T21, H-863TU21, H-864T21, H-864TU21, B, H-865T21, B, H-865TU21, B, H-866T21, B, H-866TU21, B, H-867T21, H-867TU21, A, H-868T21, H-868TU21, A, H-871T21, H-871TU31, H-872T21, H-872TU21 (Ch. V-2313-13, -25, -35, V-2323-101, -122, -124, -201, -301)

PROPERTY OF
L. F. ELA
3924 M
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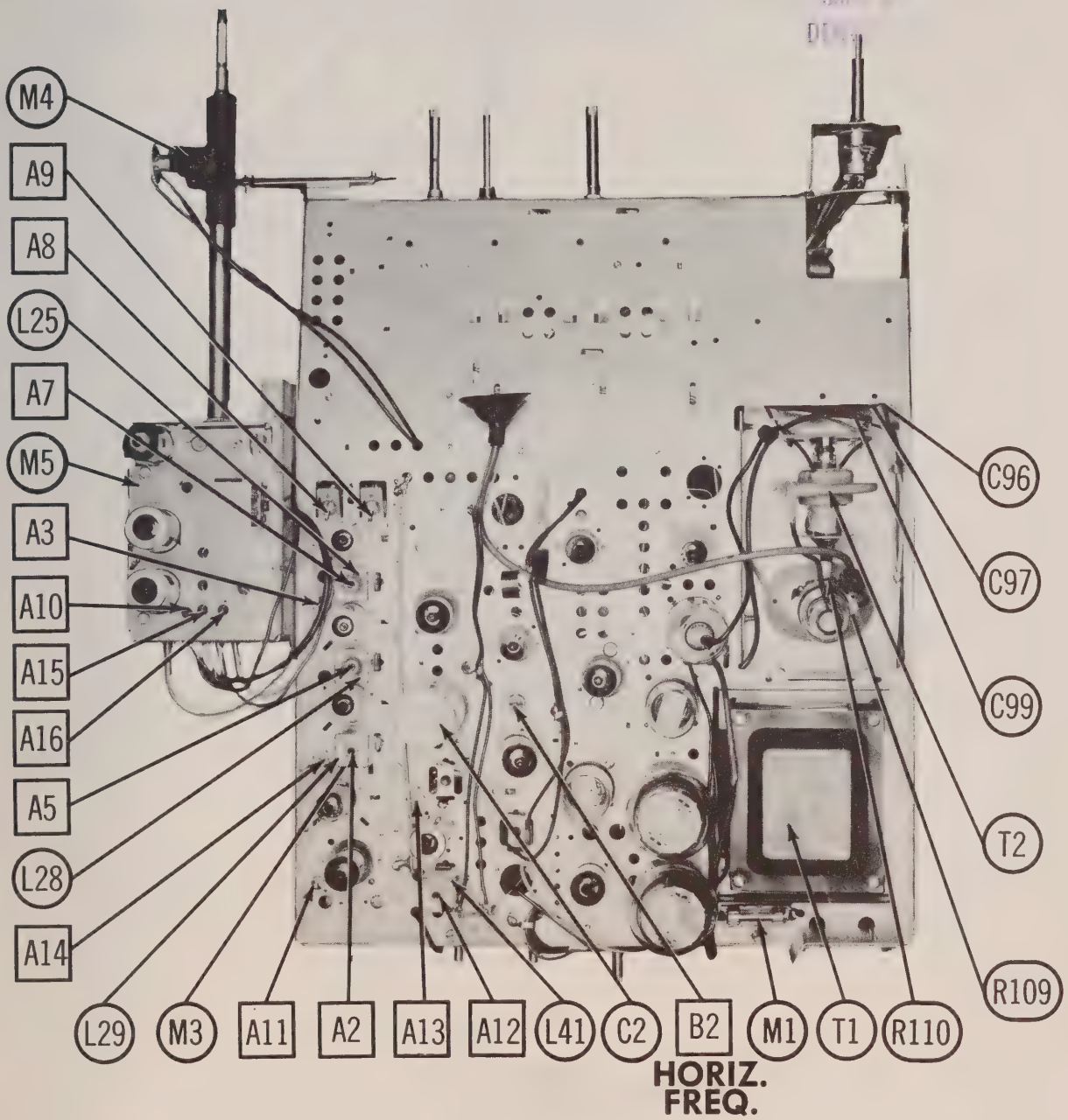
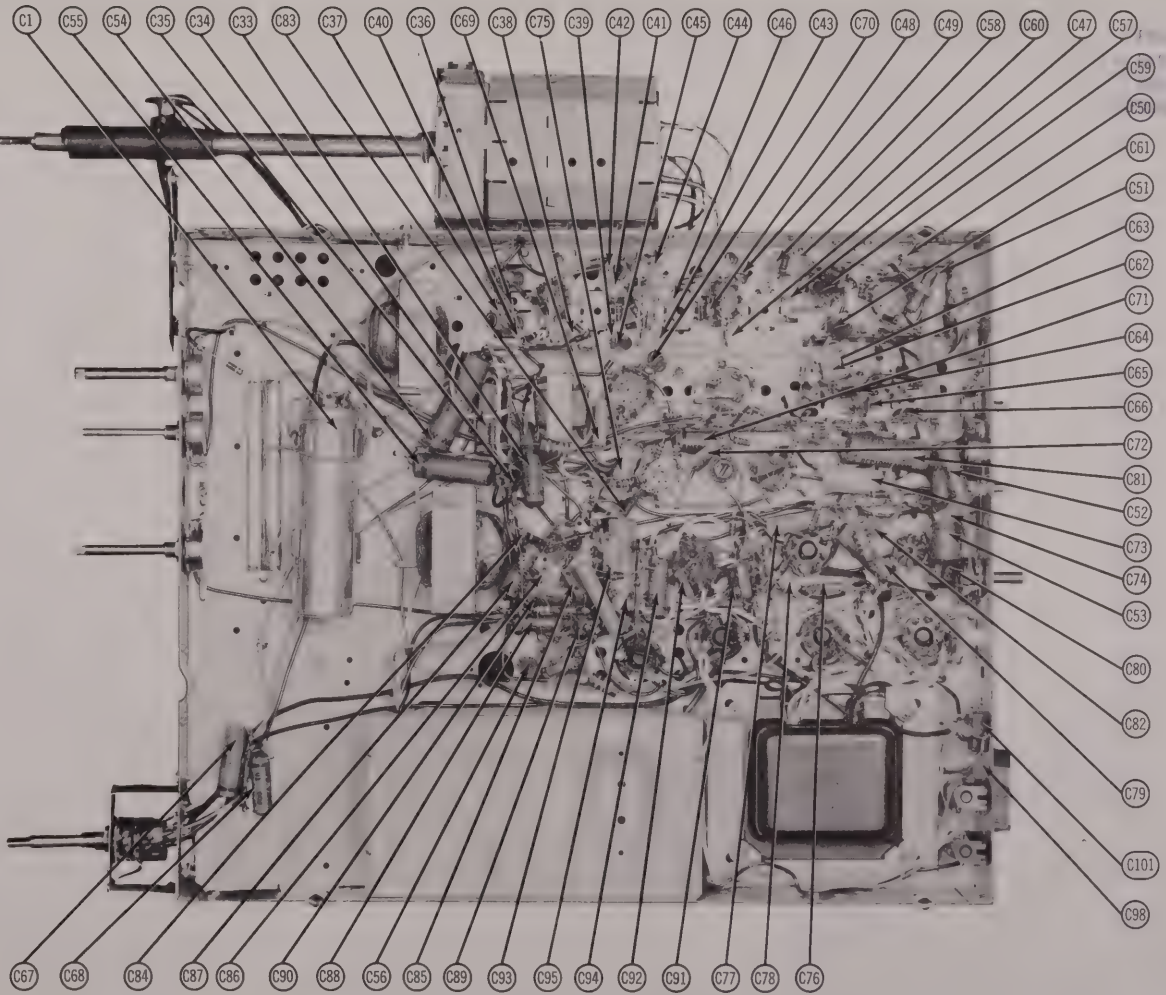


CHASSIS TOP VIEW

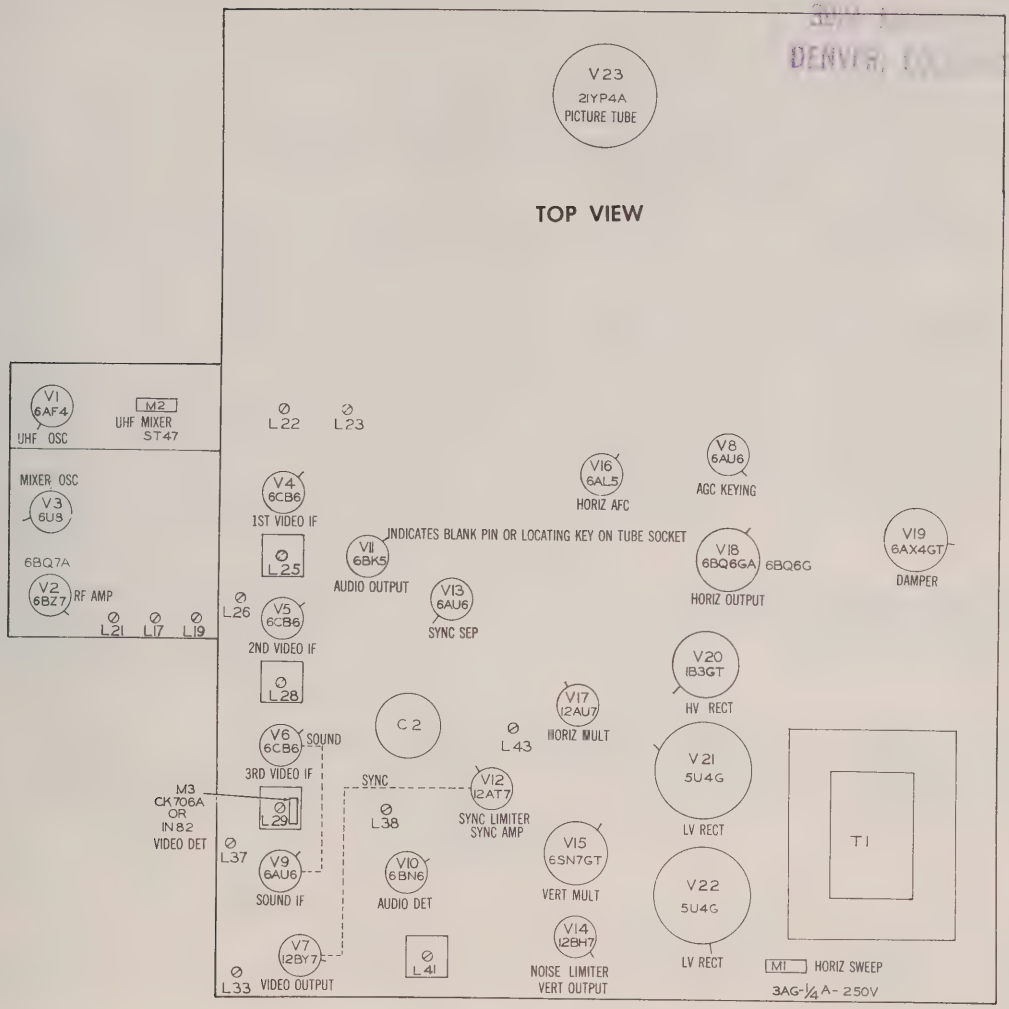
SET 270 FOLDER 18



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

WESTINGHOUSE MODELS H-838K218, H-838KU218, H-841T21, H-841TU21, H-843T21, H-843TU21, H-843K21, H-843KU21, H-844K21, H-844KU21, H-847K21, H-847KU21, H-848K21, H-848KU21, H-861T21, H-861TU21, H-862T21, H-862TU21, H-863T21, H-863TU21, H-864T21, B, H-864TU21, B, H-865T21, B, H-865TU21, B, H-866T21, B, H-866TU21, B, H-867T21, H-867TU21, A, H-868T21, H-868TU21, A, H-871T21, H-871TU21, H-872T21, H-872TU21 (Ch. V-2313-15, -25, -35, V-2323-101, -122, -124, -201, -301)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V21, V22**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, V6, (V1 UHF only)**
No pic, no sound, has snow - **V2, V3, V4**
No pic, has sound, has raster - **V7, V8, V23**
Has pic, no sound - **V9, V10, V11**
Overloaded picture - **V8**

SYNC FAILURE
No vert. sync - **V13, V15**
No horiz. sync - **V13, V16, V17**
No vert. or horiz. sync - **V12, V13, V14**

SWEEP FAILURE
No raster, has sound - **V17, V18, V19, V20, V23, Fuse (M1)**
No vertical deflection - **V14, V15**
Poor vert. linearity or foldover - **V14, V15**
Poor horiz. linearity or foldover - **V17, V18, V19**
Narrow picture - **V17, V18, V19, V20, V21, V22**
Vert. off freq. - **V13, V15**
Horiz. off freq. - **V13, V16, V17**

WESTINGHOUSE MODELS H-838K21B, H-838KU21B, H-841T21, H-841TU21, H-842T21, H-842TU21, H-843K21, H-843KU21, H-844K21, H-844KU21, H-847K21, H-847KU21, H-848K21, H-848KU21, H-861T21, H-861TU21, H-862T21, H-862TU21, H-863T21, H-863TU21, H-864T21, B, H-864TU21, B, H-865T21, B, H-865TU21, B, H-866T21, B, H-866TU21, B, H-867T21, H-867TU21, A, H-868T21, H-868TU21, A, H-871T21, H-871TU21, H-872T21, H-872TU21 (Ch. V-2313-15, -25, -35, V-2323-101, -122, -124, -201, -301)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal multivibrator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the RF amplifier tube (V1) from its socket to prevent the possibility of undesirable beat response.
Connect a 470MMF capacitor across the oscilloscope vertical input terminals.
Connect the negative lead of a 9 volt supply to the ungrounded lead of C35. Connect the positive lead to chassis.
If peaks appear at two different settings of the slugs, use the one farthest counter clockwise.
Use high scope gain and only enough generator output to provide a useful response on scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to pin 1 (grid) of 6CB6 (V6). Low side to chassis near V6.	44MC (10MC Swp)	42.25MC 45.75MC	13	Vert. Amp. thru 47KΩ to point (A). Low side to chassis.	A1, A2	Attach detuning clips (alligator clips) to pin 5 (plate) of V4 and V5. Adjust A1 for maximum amplitude of response. Adjust A2 for symmetrical response similar to Fig. 1.
2.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis. near V4.	Not used	47.25MC (400∿Mod)	"	"	A3	Adjust for MINIMUM 400∿ response on scope.
3.	"	High side to pin 1 (grid) of 6CB6 (V5). Low side to chassis near V5.	44MC (10MC Swp)	42.25MC 45.75MC	"	"	A4, A5	Remove detuning clip from plate of V5. Adjust A4 for maximum amplitude at response. Adjust A5 for symmetrical response similar to Fig. 2.
4.	"	High side to pin 1 (grid) of 6CB6 (V4). Low side to chassis near V4.	"	42.25MC 44.0MC 45.75MC	"	"	A6, A7 A10	Remove detuning clip from V4. Detune A10 several turns counter clockwise. Adjust A6 for maximum amplitude of response. Adjust A7 for symmetrical response similar to Fig. 3. Adjust A10 so the dip it causes occurs at 44MC. Replace RF amp. tube in its socket.
5.	Fig. 5.	Thru matching network (Fig. 5) to antenna terminals.	213MC (10MC Swp)	41.25MC 42.25MC 43.0MC 44MC 45MC 45.75MC 47.25MC	"	"	A8, A9	Set fine tuning control to mid-range. Clip high side of marker generator to converter tube shield. (Leave low side disconnected. Adjust A9 for symmetrical response similar to Fig. 4. Adjust A9 for MINIMUM marker amplitude at 41.25MC.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.001MFD	High side to point (A). Low side to chassis.	Not used	4.5MC (Unmod)	Any unused channel	Use VTVM DC probe thru detector (Fig. 7) to pin 11 of picture tube. Common to chassis.	A11	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (15KC Swp)	4.5MC	Any unused channel	Vert. input across volume control	A12	Use strong signal from generator. Adjust A12 for maximum response at 4.5MC.
8.	"	"	"	"	"	"	A13, A14, A12	Attenuate generator to give MINIMUM useful indication on scope. Adjust A13, A14 and A12 for maximum output.
9.	"	"	Not used	4.5MC (30% 400∿ Mod.)	"	"	R5	Starting with a very low signal input gradually. Increase the level, at the same time turning the quieting control (R5) back and forth until the signal level reaches the point where the AM output reaches the point where the output on the scope dips to zero with a peak on each side. Set R5 for zero output at this signal level.

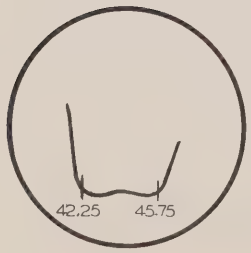


FIG. 1

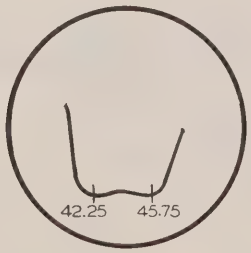


FIG. 2

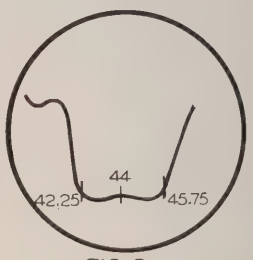


FIG. 3

ALIGNMENT INSTRUCTIONS (cont)

SOUND ALIGNMENT USING A TV SIGNAL

Tune in a TV station and connect an attenuator between the antenna and the receiver.
Set the quieting control (R5) to the mid-position of its range.
Adjust the quadrature coil (A12) for maximum sound.
If two widely spaced peaks occur use the one with the slug farthest counter clockwise. If two closely spaced peaks occur, either the signal is not sufficient strong or the quieting control is not properly set.
Reduce the signal to its lowest usable level , and adjust A13, A14 and A12 for maximum sound. Recheck adjustments at lowest usable signal level.
Apply a very weak signal that allows noise to be heard in the speaker.
Adjust the quieting control for minimum noise. The point of minimum noise depends on the strength of the signal, therefore, the weakest possible signal should be used.
Do not leave R5 at its maximum counter clockwise position.

VHF OSCILLATOR ALIGNMENT FOR TUNER V-14130-1

Set the fine tuning control to the center of its range . This is indicated by the slot in the shaft being straight up and down. Set the channel selector to the highest high band channel (7-13) station operating in the area. Adjust the high band oscillator adjustment (A15) for best picture detail.
Set the channel selector switch to the highest low band channel (2-6) operating in the area. Adjust the low band oscillator adjustment (A16) for best picture detail. Recheck the setting of A15 and if it has changed repeat the entire procedure.

RF AND MIXER ALIGNMENT FOR TUNER V-14130-1

The RF and mixer portions of this tuner have been properly aligned at the factory and are very stable. Alignment of this portion is not recommended in the field.

ALIGNMENT FOR UHF PORTION OF TUNER V-14130-1

In the event the UHF oscillator tube is replaced, it is recommended that several tubes be tried and the one which works best should be used. Alignment of the tuner should not be required in the field.

OSCILLATOR ALIGNMENT FOR TUNER V-14170-2

Complete oscillator alignment may not be required.
If the oscillator seems to be off frequency approximately the same amount for each channel, it may be possible to correct them in one step using A17. It should be noted that A17 is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of A17 will not bring all channels well within the range of the fine tuning control, it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustments are reached thru a hole in the front of the tuner, just to the right of the channel switch shaft. The correct adjustment screw is accessible thru this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Fig. 5	Thru matching network (Fig.5) across antenna terminals.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. Amp. thru 47KΩ to point A . Low side to chassis.	A18	Adjust to place sound marker in "notch" as shown in Fig.6. The video marker should be at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A19	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A20	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A21	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A22	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A23	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A24	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A25	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A26	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A27	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A28	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A29	

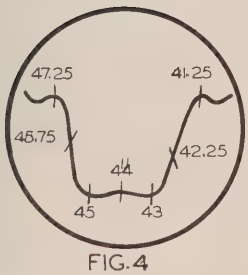
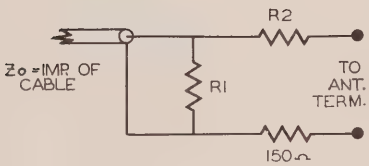


FIG.4



Zo	R1	R2
50Ω	56Ω	120Ω
72Ω	82Ω	110Ω

FIG. 5

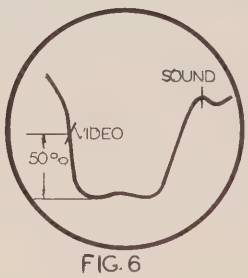


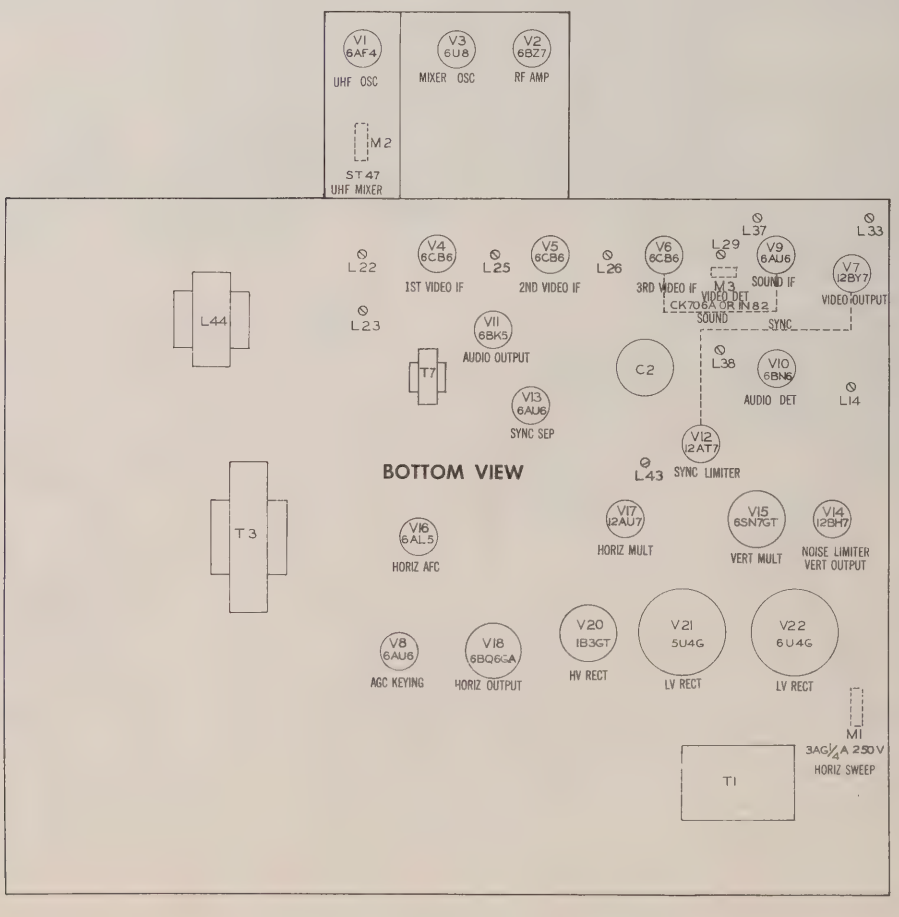
FIG. 6

PROPERTY OF W.E. PLANT 2021 N. DEV.

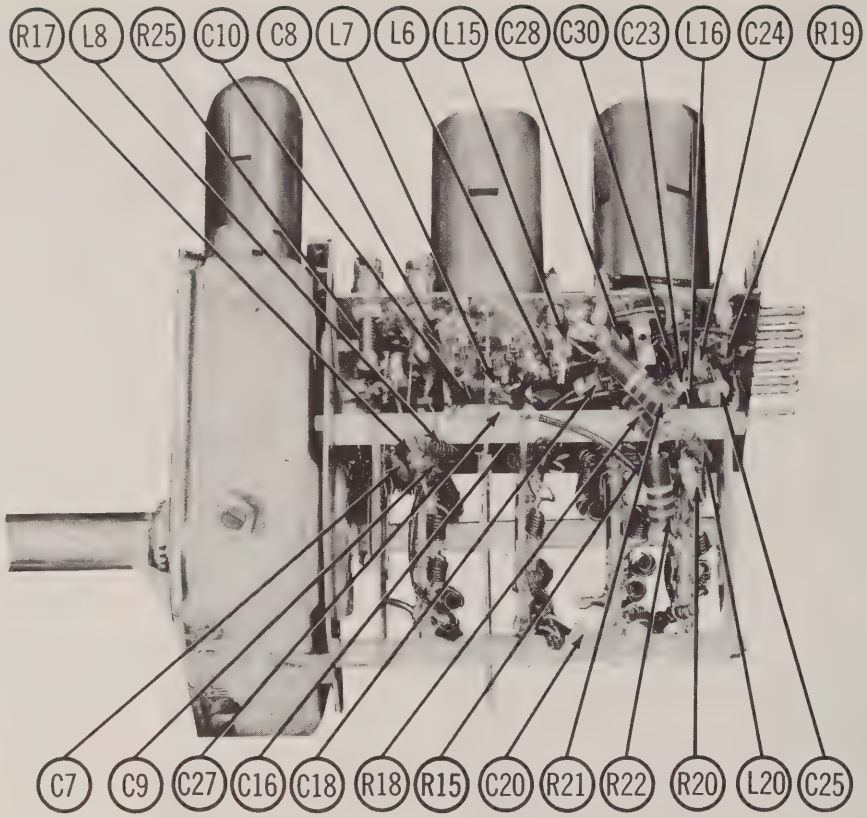
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6AF4	†▲7.5KΩ	10KΩ	.1Ω	0Ω	0Ω	10KΩ	†▲7.5KΩ		
V 2	6BZ7	†800Ω	†500KΩ	INF	.1Ω	0Ω	INF	2Meg	0Ω	0Ω
V 3	6U8	†4KΩ	480KΩ	†16KΩ	.1Ω	0Ω	†1.8KΩ	0Ω	0Ω	15KΩ
V 4	6CB6	110KΩ	68Ω	.1Ω	0Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 5	6CB6	110KΩ	68Ω	.1Ω	0Ω	†2.2KΩ	†2.2KΩ	0Ω		
V 6	6CB6	.4Ω	150Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 7	12BY7	250Ω	3.3KΩ	0Ω	.1Ω	.1Ω	0Ω	†4KΩ	†1.7KΩ	0Ω
V 8	6AU6	†14KΩ	†6KΩ	0Ω	.1Ω	460KΩ	†1.7KΩ	†6KΩ		
V 9	6AU6	.6Ω	0Ω	.1Ω	0Ω	†3KΩ	†3KΩ	120Ω		
V 10	6BN6	400Ω	14Ω	0Ω	.1Ω	†22KΩ	7Ω	†330KΩ		
V 11	6BK5	†1.1KΩ	100KΩ	100KΩ	.1Ω	0Ω	180Ω	100KΩ	†1.5KΩ	†500Ω
V 12	12AT7	†9.5KΩ	15KΩ	0Ω	.1Ω	.1Ω	†100KΩ	100KΩ	0Ω	0Ω
V 13	6AU6	1Meg	0Ω	0Ω	.1Ω	†30KΩ	†170KΩ	1.2KΩ		
V 14	12BH7	▲5.5KΩ	2.2Meg	2KΩ	.1Ω	.1Ω	1Meg	1Meg	1.2KΩ	0Ω
V 15	6SN7GT	65KΩ	†100KΩ	1.2KΩ	850KΩ	▲450KΩ	1.2KΩ	.1Ω	0Ω	
V 16	6AL5	1Meg	0Ω	0Ω	.1Ω	1Meg	0Ω	2Meg		
V 17	12AU7	†60KΩ	3Meg	820Ω	.1Ω	.1Ω	†60KΩ	300KΩ	820Ω	0Ω
V 18	6BQ6GA	INF	0Ω	INF	†6.8KΩ	470KΩ	▲26Ω	.1Ω	0Ω	Top Cap ▲20Ω
V 19	6AX4GT	INF	INF	800KΩ	INF	†60Ω	INF	.1Ω	0Ω	
V 20	1B3GT		PINS	1 - 8	HAVE	INFINITE	RESISTANCE			Top Cap ▲595Ω
V 21	5U4G	INF	20KΩ	INF	15Ω	INF	16Ω	INF	20KΩ	
V 22	5U4G	INF	20KΩ	INF	15Ω	INF	16Ω	INF	20KΩ	
V 23	21YP4A	0Ω	†1.6Meg	Pin 6 ▲35KΩ	Pin 10 ▲33KΩ	Pin 11 †180KΩ	Pin 12 .1Ω			

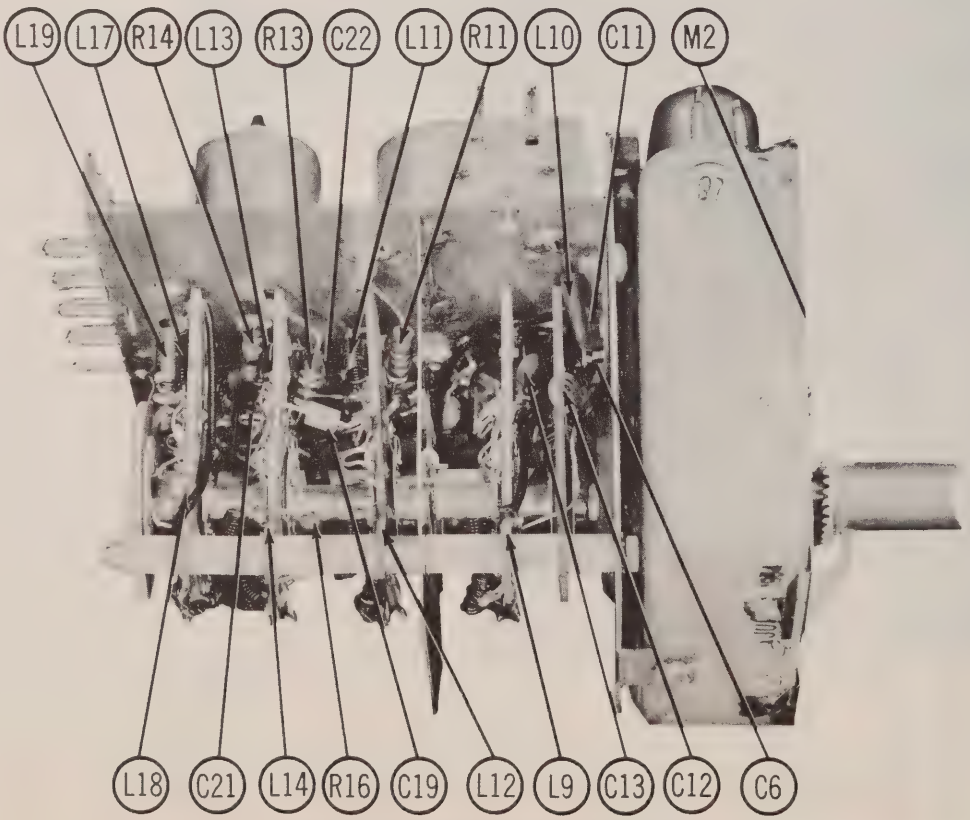
† MEASURED FROM PIN 8 OF V22
▲ MEASURED FROM PIN 3 OF V19
▲ MEASURED IN "UHF" POSITION



TUBE PLACEMENT CHART

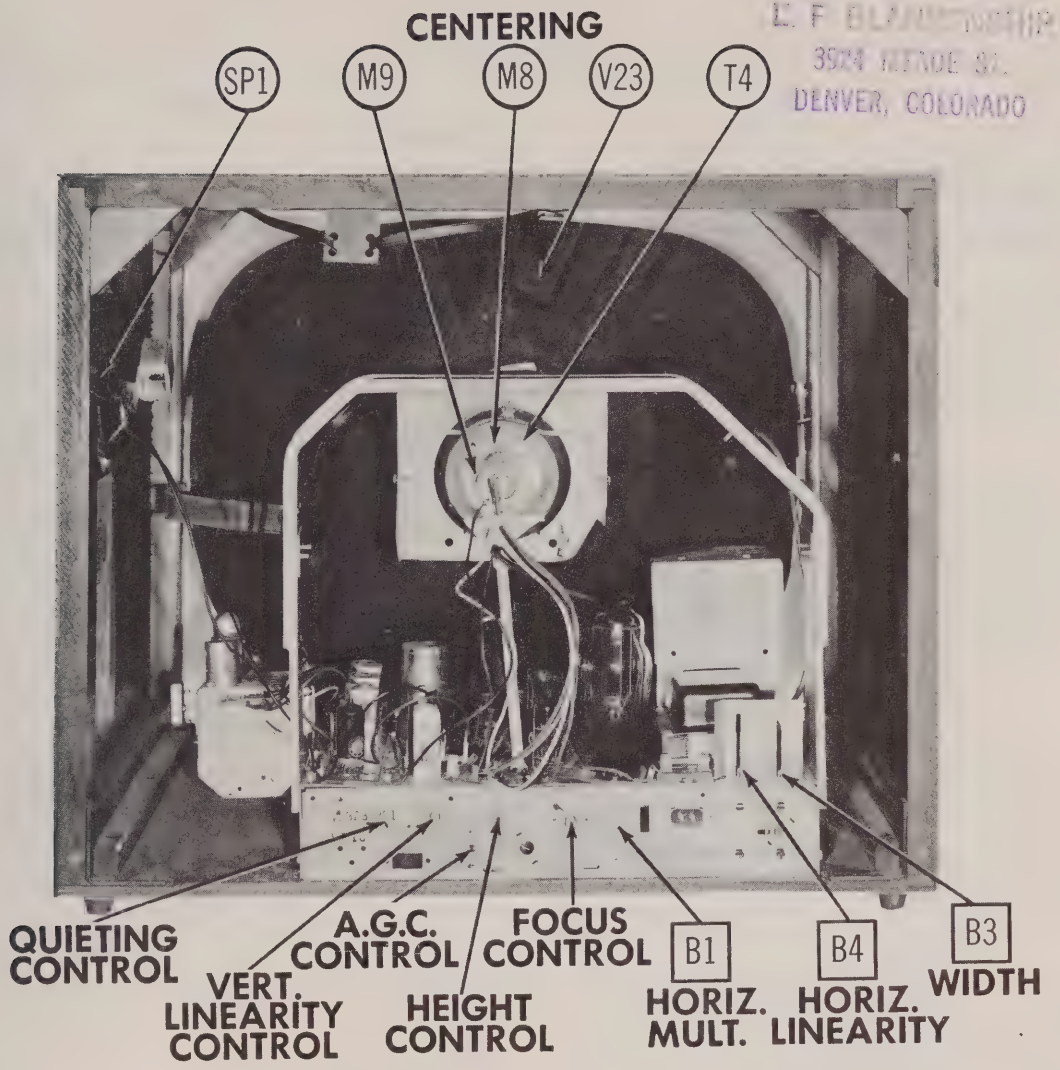


VHF TUNER-RIGHT SIDE



VHF TUNER-LEFT SIDE

PROFESSOR OF
E. F. BLANKENSHIP
3924 WINONA ST.
DENVER, COLORADO



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control to the mid-position of its range.

Connect a short across the horizontal oscillator coil (L43). Connect the DC probe of a VTVM to pin 2, (grid), of 12AU7 (V17). Connect the common lead to chassis.

Adjust the horizontal multivibrator trimmer (B1) for zero volts on VTVM. If necessary, turn the horizontal hold control slightly to obtain zero reading.

Remove jumper from L43 and adjust horizontal oscillator slug (B2) for zero reading on VTVM. Switch off channel and back again. Picture should immediately pull into sync.

Adjust the horizontal width slug (B3) until the picture is slightly wider than necessary to fill the mask horizontally.

Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right.

TROUBLE SHOOTING AIDS

SWEEP

HORIZONTAL

LOSS OF SWEEP

Follow procedure outlined under "Loss of High Voltage".

INSUFFICIENT SWEEP

Check by substitution V18, V19, V21 and V22. Check adjustments B3 and B4. Check T2, T4A, R108, C94 and other associated components.

DRIVE LINES

Check by substitution V18 and V19. Check adjustment B4. Check R108, R105, C94, C93, T2 and other associated components.

COMPRESSED LEFT SIDE

Check by substitution V18 and V19. Check horizontal output and damper stages for component failure or change of value.

FOLDS

Follow procedure outlined under "Drive Lines".

PIE CRUST EFFECT

Check by substitution V17, V18 and V19. Check C89 for open. Check C88, C90, R100, R99 and other associated components.

XMAS TREE EFFECT

Check by substitution V17, V18 and V19. Check T2 and T4 for internal arcing. Check L43, C91, C84, C89, R98, R101, R105 and other associated components.

VERTICAL

LOSS OF SWEEP

Check by substitution V15 and V14. Check waveform W9.

If Satisfactory	If Unsatisfactory
Check T3, T4B, C2B, C2C, R92, R87 and other associated components.	Check R81, R84, R83, R8, C77, C78, C81 and other associated components.

INSUFFICIENT SWEEP

Check by substitution V15 and V14. Check height and vertical linearity controls for proper operation. Check T3, T4B, R83, R84 and other associated components.

COMPRESSED AT BOTTOM

Check by substitution V15 and V14. Check R85, R84, R83, R8, C81, C77 and other associated components.

COMPRESSED AT TOP

Check by substitution V15 and V14. Check C81, C2C, R87, R6, T3 and other associated components.

FOLDS

Check by substitution V15 and V14. Check C77, C78, C81, R80 and other associated components.

SYNC

LOSS OF VERTICAL AND HORIZONTAL SYNC

Check by substitution V12 and V13. Check C71, C72, C75, R68, R69, R67, R66, R65 and other associated components.

LOSS OF VERTICAL SYNC-HORIZONTAL SYNC SATISFACTORY

Substitute V15. Check vertical integrator network. Check R3, R82, C77, C78 and other associated components.

LOSS OF HORIZONTAL SYNC-VERTICAL SYNC SATISFACTORY

Check by substitution V16 and V17. Check horizontal AFC network. Check C83, C92, R102, R2 and other associated components.

HORIZONTAL BENDING

Check by substitution V8, V12, V13, V16 and V17. Check horizontal AFC network.

VIDEO

LOSS OF VIDEO

Substitute V7. Check C50, C51, C52, R45, L35, L34, L36 and other associated components.

SOUND BARS (4.5MC BEAT)

Adjust tuner fine tuning for best sound and picture Check adjustment A11. Check video IF alignment.

POOR CONTRAST

Substitute V7. Check contrast control. Check video crystal detector. Check R44, R46, C50, C51, L34, L36, L23 and other associated components.

NEGATIVE PICTURE

Substitute V7. Check picture tube. Check video crystal detector. Check L33, L31, C50, C51, R46 and R47. Check video IF alignment and other associated components.

SMEAR

Substitute V7. Check L31, L32, L34, L36, C50, C51, R46 and other associated components.

WIDE BLACK BAR ACROSS PICTURE

Check by substitution V2, V4, V5, V6 and V7 for heater to cathode leakage.

AUDIO

WEAK OR NO SOUND

Check by substitution V9, V10 and V11. Check stage V11 using audio signal generator. Apply audio signal across R1B.

If Satisfactory	If Unsatisfactory
Check audio detector and audio IF stages for component failure or change of value.	Check C65, C67, C2A, C69, R58, R64, T7, speaker and other associated components.

BUZZ

Adjust tuner fine tuning for best sound and picture. Check adjustments R5 and A12. If still unsatisfactory, check audio IF alignment.

DISTORTED

Follow procedure outlined under "Weak or No Sound".

POWER

DEAD SET

If filaments fail to light, check AC interlock assembly. Check switch on volume control and T1. If filaments light, check by substitution V21 and V22. Check B+ filter and decoupling network.

SMALL AND/OR DIM PICTURE

Check by substitution V21 and V22. Check B+ filter and decoupling network.

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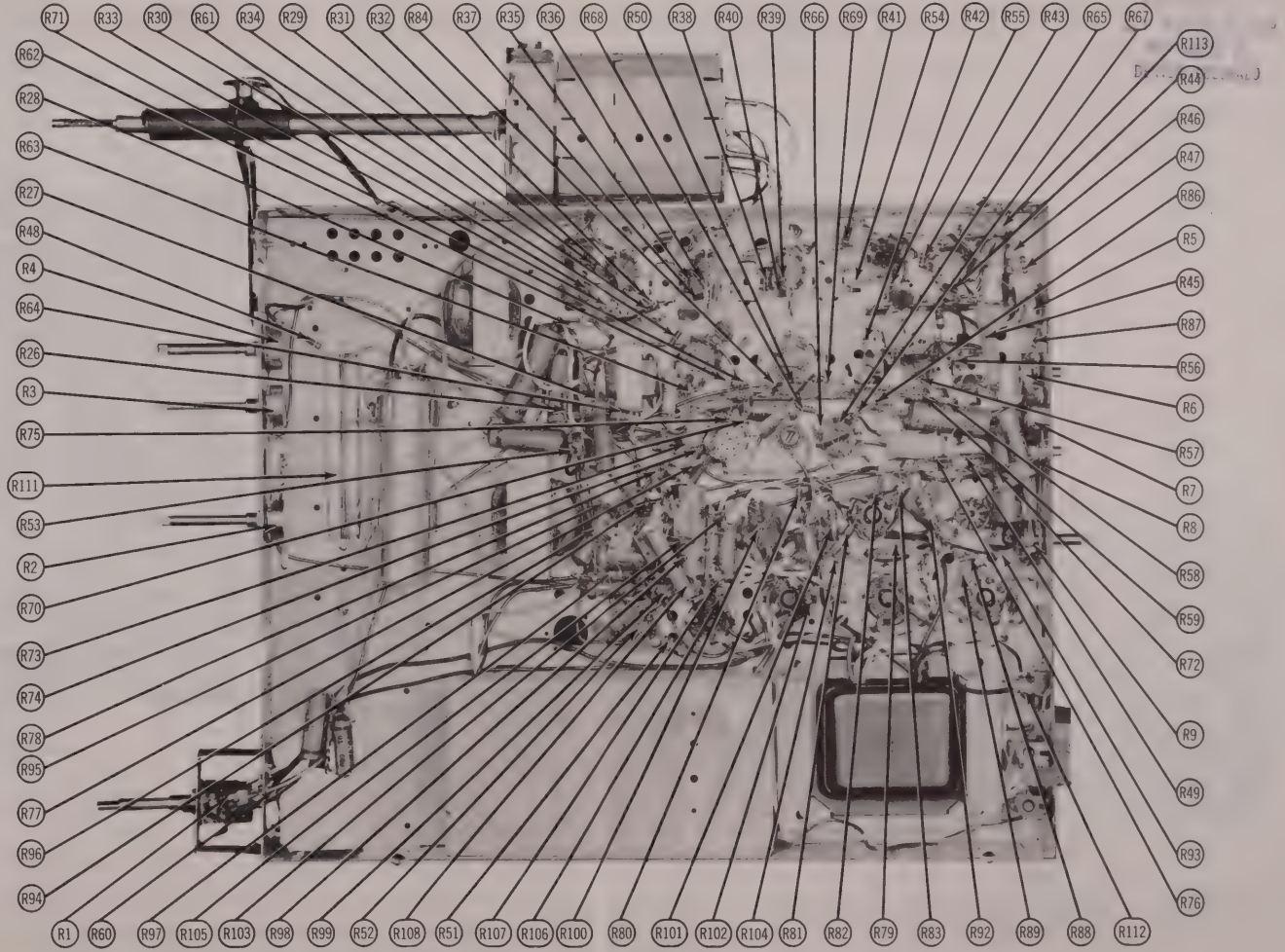
CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

WESTINGHOUSE MODELS H-838K21B, H-838KU21B, H-841T21, H-841TU21, H-842T21, H-842TU21, H-843K21, H-843KU21, H-844K21, H-844KU21, H-847K21, H-847KU21, H-848K21, H-848KU21, H-861T21, H-861TU21, H-862T21, H-862TU21, H-863T21, H-863TU21, H-864T21, B, H-864TU21, B, H-865T21, B, H-865TU21, B, H-866T21, B, H-866TU21, B, H-867T21, H-867TU21, A, H-868T21, H-868TU21, A, H-871T21, H-871TU21, H-872T21, H-872TU21 (Ch. V-2313-15, -25, -35, V-2323-101, -122, -124, -201, -301)



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION

WESTINGHOUSE MODELS H-838K31B, H-838KU31B, H-841T21, H-841TU21, H-842T21, H-842TU21, H-843K21, H-843KU21, H-844K21, H-844KU21, H-847K21, H-847KU21, H-848K21, H-848KU21, H-851T21, H-851TU21, H-863T21, H-863TU21, H-864T21, B, H-864TU21, B, H-865T21, B, H-865TU21, B, H-866T21, B, H-866TU21, B, H-867T21, H-867TU21, A, H-868T21, H-868TU21, A, H-871T21, H-871TU21, H-872T21, H-872TU21 (CN, V-2313-15, -25, -35, V-3333-101, -121, -124, -201, -301)

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		Westinghouse PART No.	STANDARD REPLACEMENT		
V1	UHF Oscillator	6AF4	6AF4	7DK	
V2	RF Amplifier	6BZ7	6BZ7	9AJ	6BQ7A used as an alternate
V3	Mixer - Osc.	6U8	6U8	9AE	
V4	1st. Video IF Amp.	6CB6	6CB6	7CM	
V5	2nd. Video IF Amp.	6CB6	6CB6	7CM	
V6	3rd. Video IF Amp.	6CB6	6CB6	7CM	
V7	Video Output	12BY7	12BY7	9BF	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Audio Detector	6BN6	6BN6	7DF	
V11	Audio Output	6BK5	6BK5	9BQ	
V12	Sync Limiter-Sync Amplifier	12AT7	12AT7	9A	
V13	Sync Separator	6AU6	6AU6	7BK	
V14	Noise Limiter-Vert. Output	12BH7	12BH7	9A	
V15	Vert. Mult.	6SN7GT	6SN7GT	8BD	
V16	Horiz. AFC	6AL5	6AL5	6BT	
V17	Horiz. Mult.	12AU7	12AU7	9A	
V18	Horiz. Output	6BQ6GA	6BQ6GA	6AM	6BQ6G used as an alternate
V19	Damper	6AX4GT	6AX4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	
V22	LV Rectifier	5U4G	5U4G	5T	

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L. F. [illegible]
3924 [illegible] ST
DENVER, COLORADO

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA					RETMA BASE TYPE	NOTES
	Westinghouse PART No.	CBS-HYTRON PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	WESTINGHOUSE PART No.		
V23	21YP4A ①	21YP4A ① 21YP4	21YP4A ① 21YP4	21YP4A ① 21YP4 21AFP4 ②	21YP4A ① 21YP4	12L 12L 12M	① Aluminized ② Circuit changes necessary.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C1A	▰40	450	V-9891	AFH4-93		D092		FP428.4	TVL-4720	
B	■40	450								
C	▲30	350								
D	30	350								
C2A	30	50	V-11535-1	AFH4-114-75		D113		FP366.5 TC84	R1488	
B	▰30	500								
C	▲150	50								
D	■10	450								
C3	4	450	V-4885							Note 1
C4	150			BPD-151	D6-151	G046	811-151	UC-5315	5GA-T15	
C5	15									
C6	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0A-6R8	ZT-5568	5TCCB-V68	
C7	15			SI15	D6-150	G021	831-150	UC-5415	5GA-Q15	
C8	4									
C9	2.7									
C10	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C11	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0A-6R8	ZT-5568	5TCCB-V68	
C12	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C13	6.8			SI6.8NP0	TCZ-6.8	Z013	NP0A-6R8	ZT-5568	5TCCB-V68	
C14	1000			EF-001	MFT-1000				503C-D1	
C15	1000			EF-001	MFT-1000				503C-D1	
C16	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C17	1000			EF-001	MFT-1000				503C-D1	
C18	.3									
C19	.56									
C20	.91									
C21	15			SI15	D6-150	G021	831-150	UC-5415	5GA-Q15	
C22	1.2									
C23	15			SI15	D6-150	TP11	GP1K-150 N220K-100 N220K-100	UC-5415	5GA-Q15	
C24	10									
C25	10									
C26	1000			EF-001	MFT-1000				503C-D1	
C27	1000			EF-001	MFT-1000				503C-D1	
C28	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C29	1000			EF-001	MFT-1000				503C-D1	
C30	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C31	5									
C32	1000			BPD-001	DD-102	K069	801-001	DC-521	5HK-D1	
C33	.05	400	RCP10W4503M	P488-05	DF-503	CUB4S5		PT415	4TM-S2	
C34	.02	600	RCP10M6203M	P688-02	DF-203	CUB6S2	817-02	PT612	6TM-S2	
C35	5000		R2CC62Z5Z502P	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C36	2.2		V-8963-2296	SI2.2NP0	TCZ-2.2	TZ05	NP0A-2R2		5TCCB-V22	
C37	68		R1CC20S2L680K	SI68	D6-680	TP32	GP1K-680	UC-5468	5GA-Q68	
C38	800		R2CC61Z5Z801P	BPD-801	DD-801	K069	801-001	DC-521	5HK-D1	
C39	800		R2CC61Z5Z801P	BPD-801	DD-801	K069	801-001	DC-521	5HK-D1	
C40	800		R2CC61Z5Z801P	BPD-801	DD-801	K069	801-001	DC-521	5HK-D1	
C41	2.2		V-8963-2298	SI2.2NP0	TCZ-2.2	TZ05	NP0A-2R2		5TCCB-V22	
C42	47		R1CC20S2L470K	SI47	D6-470	TP29	GP1K-470	UC-5447	5GA-Q47	
C43	800		R2CC61Z5Z801P	BPD-801	DD-801	K069	801-001	DC-521	5HK-D1	
C44	800		R2CC61Z5Z801P	BPD-801	DD-801	K069	801-001	DC-521	5HK-D1	
C45	5000		R2CC62Z5Z502P	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	
C46	.47		V-8963-4788		TCZ-.5	TZ01	NP0A-0R5			
C47	800		R2CC61Z5Z801P	BPD-801	DD-801	K069	801-001	DC-521	5HK-D1	
C48	800		R2CC61Z5Z801P	BPD-801	DD-801	K069	801-001	DC-521	5HK-D1	
C49	800		R2CC61Z5Z801P	BPD-801	DD-801	K069	801-001	DC-521	5HK-D1	
C50	56	500	RCM20B560K	1469-560	TCZ-56	22R5Q56	NP0L-560	ZT-5456	5TCC-Q56	
C51	.1	400	RCP10M4104M	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C52	.02	600	RCP10M6203M	P688-02	DF-203	CUB6S2	817-02	PT612	6TM-S2	
C53	.25	400	RCP10W4254M	P488-25		CUB4P25		PT4025	4TM-P25	
C54	.25	400	RCP10W4254M	P488-25		CUB4P25		PT4025	4TM-P25	
C55	.1	400	RCP10W4104M	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C56	5000		R2CC62Z5Z502F	BPD-005	DD-502	K080	811-005	DC-525	5HK-D5	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C57	4.7		V-9826-3	684-2MP0	TCZ-4.7	TZ0T	MPGA-4R7	ZT-555	5TCC8-V47	
C58	100	500	RCM20B151K	1469-151		BPD-005		MC5236		
C59A	5000		V-9044-1	BPD-2X005	DD2-502	DK080 ①	81L-005	DC-525	5HK-D5	
B	5000						81L-005	DC-535		
C60	5000		R3CC62252502P	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C61	5000		R3CC62252502P	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C62	47	500	RCM05B470K	1469-470	TCZ-47	2BK9Q47	MPGK-470	MC8225	MB-45	
C63	47		R1CC62R0Q470K	BPD-470	DE-470	G033	831-470	UC-5447	5GA-Q47	
C64A	5000		V-9044-1	BPD-2X005	DD2-502	DK080 ①	81L-005	DC-525	5HK-D5	
B	5000						81L-005	DC-535		
C65	1500		R3CC62Y35Y152P	BPD-005	DD-152	K071	801-5015	DC-5215	5HK-D15	
C66	5000		R3CC62252502P	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C67	.02	600	RCP10M6203M	P688-02	DF-203	CUB3B2	817-02	PT812	6TM-S2	
C68	.01	600	RCP10M6103M	P688-01	DS-103	CUB3S1	GP2-333-163	PT611	6TM-S1	
C69	.005	600	RCP10M6502M	P688-005	DF-502	CUB3G5	GP2-333-502	PT625	6TM-D5	
C70	5000		R3CC62252502P	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C71	.005	600	RCP10M6502M	P688-005	DD-502	CUB5S1	GP2-333-163	PT611	6TM-S1	
C72	470	500	RCM05B471K	1469-271	DE-271	5WST27	GP2K-271	UC-5327	5GA-T27	
C73	.1	400	RCP10W4104M	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C74	270	500	RCM05B271K	1469-271	DE-271	5WST27	GP2K-271	UC-5327	5GA-T27	
C75	.1	400	RCP10W4104M	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C75A	10000						K082	81L-01		
B	2000		4V-11193-1	4PA-III	4PC-101	4W72	81L-002	DC-522	4V-3	
C	5000						K080	81L-005	DC-535	
D	5000						81L-005	DC-525	5HK-D5	
C77	.01	600	RCP10M6103K	P688-01	DS-103	CUB3S1	GP2-333-103	PT611	6TM-S1	
C78	.05	400	RCP10W4503M	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C79	.05	400	RCP10W4503K	P488-05	DF-503	CUB4S5		PT415	4TM-S5	
C80	.1	400	RCP10W4104M	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C81	.1	600	RCP10M6104M	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C82	5000		R3CC62252502P	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C83	150	500	RCM20B151K	1469-151	DE-151	5WS7I5	GP2K-151	MC235	1FM-J15	
C84	100	500	RCM20B101K	1469-101	DE-101	5WS7I	GP2K-101	MC235	1FM-J1	
C85	390	500	RCM20B391K	1469-391	DE-391	5WS7J3	GP2K-391	MC343	1FM-J4	
C86	680	500	RCM20B681K	1469-681	DE-681	5WS7J6	GP2K-681	MC343	1FM-J5	
C87	.01	600	RCP10M6103M	P688-01	DS-103	CUB3S1	GP2-333-103	PT611	6TM-S1	
C88	.005	600	RCP10M6502M	P688-005	DF-502	CUB6D5	GP2-333-502	PT625	6TM-D5	
C89	.01	600	RCP10M6103M	P688-01	DS-103	CUB3S1	GP2-333-103	PT611	6TM-S1	
C90	.1	400	RCP10W4104M	P488-1	DF-104	CUB4P1		PT401	4TM-P1	
C91	3900	500	RCM30C392K	1464-392		3SR3D9		MC8463	MB-34	
C92	82	500	RCM20B820K	1469-820		3SR5Q82				
C93	390	500	RCM20B391K	1469-391		5RS7J3		MC8343	MB-34	
C94	.01	600	RCP10M6103M	P688-01	DS-103	CUB6S1	GP2-333-103	PT611	6TM-S1	
C95	.1	600	RCP10M6104M	P688-1	DF-104	CUB6P1		PT601	6TM-P1	
C96	.04	400	RCP10W4403M	P488-04		CUB4S4		PT414	4TM-S4	
C97	.01	600	RCP10M6103M	P688-01		CUB6S6		PT616	6TM-S6	
C98	5000		R2CC62252502P	BPD-005	DD-502	K080	81L-005	DC-525	5HK-D5	
C99	.15	400	RCP10W4154K	P488-15		CUB4P15		PT415	4TM-P15	
C100	51		V-9792-10510J							Note 2
C101	.01	600	V-9040-15	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	6TM-S1	

Note 1. Not used in some versions.
Note 2. Deflection yoke ◆V-14658-3 uses 43MMF in this application (part no. V-9792-10430J).
◆ Items C78A, C78B, C78C, R78D, R78A, R78B, R78C, R78D are combined in one unit.

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Westinghouse PART No.	IRC PART NO.	CLAROSTAT PART No	CENTRALAB PART No	MALLORY PART No	INSTALLATION NOTES
R1A	1500Ω		V-9817-10	*QJ-614	RTV-317	F1-7	UF152R	Picture - Panel
B	500KΩ					R2-47	UR55-754	† Volume tapped at 80KΩ - Rear
C	Switch					KB-1	US-28	Attach to R1B
R2A	60KΩ		V-11538-3	QU-125	A47-75K-S	AB-35	U-41	Horiz. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R2A
R3A	75KΩ		V-11538-2	QU-126	A47-750K-S	AB-60	U-54	Vert. Hold
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R3A
R4A	100KΩ		V-11538-D-2	QU-128	A47-100K-S	AB-41	U-61	Brightness
B	Shaft		Not Req.	Not Req.	KS8-3	AK-4	Not Req.	Attach to R4A
R5	500Ω		V-11345-2		39-500			Quieting - Wire Wound
R6A	5000Ω		V-12709-2	QU-114	A47-5000-S	AB-10	U-14	Vert. Linearity
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R6A
R7	1MEg		V-12272-1	QU-137		B3X-69		AGC
R8A	250KΩ		V-12709-2	QU-130	A47-250K-S	AB-50	U-43	Height
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Not Req.	Attach to R8A
R9A	2MEg		V-12709-3	QU-139	A47-2MEg-S	AB-75	U-56	Focus
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-4	Not Req.	Attach to R9A

† Universal Replacement (Mallory exact duplicate part no. UE176B)
* CONCENTRIKIT EQUIVALENT: KIT K-2, BASE ELEMENTS & SHAFTS: B17-109 & P1-123 (PANEL)
B18-133X & R2-312 (REAR)
T6-1 SWITCH

RESISTORS

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	NOTES
R10	1MEg	½		BTS-1Meg	
R11	470Ω	½		BTS-470	
R12	750KΩ	½		BTS-750K	
R13	470KΩ	½		BTS-470K	
R14	10KΩ	½		BTS-10K	
R15	6800Ω	½		BTS-6800	
R16	10KΩ	½		BTS-10K	
R17	100KΩ	½		BTS-100K	
R18	10KΩ	½		BTS-10K	
R19	15KΩ	½		BTS-15K	
R20	220KΩ	½		BTS-220K	
R21	2200Ω	½		BTA-2200	
R22	2200Ω	½		BTA-2200	
R23	100Ω	½		BTS-100	
R24	150KΩ	½		BTS-150K	Note 1
R25	5Ω	½		BTS-5Ω	
R26	1.5MEg	5%	RC20AE156J	BTS-1.5Meg 5%	
R27	18MEg 5%	½	RC30AE186J	BTS-18Meg 5%	
R28	390KΩ	½	RC30AE394K	BTS-390K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	NOTES
R29	10Ω	½	RC20AE100K	BTS-10	
R30	10KΩ	½	V-9927-10	BTS-10K	
R31	68Ω	½	RC20AE680K	BTS-68	
R32	470Ω	½	RC30AE471M	BTS-470	
R33	100KΩ 5%	½	RC30AE104J	BTS-100K 5%	
R34	10MEg	½	RC30AE103M	BTS-10Meg	
R35	47000Ω 5%	½	V-9927-3	BTS-47000 5%	
R36	68Ω	½	RC20AE680M	BTS-68	
R37	470Ω	½	RC20AE471M	BTS-470	
R38	47000Ω 5%	½	V-9927-8	BTS-47000 5%	
R39	150Ω	½	RC20AE151K	BTS-150	
R40	470Ω	½	RC20AE471M	BTS-470	
R41	220Ω	½	RC20AE221K	BTS-220	
R42	12KΩ	½	RC20AE123K	BTS-12K	
R43	3300Ω	½	RC20AE332K	BTS-3300	
R44	10Ω	½	RC20AE100K	BTS-10	
R45	3900Ω	5	V-9324-3		
R46	330KΩ	½	RC30AE334K	BTS-330K	
R47	330KΩ	½	RC30AE334K	BTS-330K	

Connect Width Coil Areas → 5 & 2 | 3 & 1 | 3 & 1 | 3 & 4 | 3 & 4 | 8 & 1 | 3 & 4

Special Notes → ⑩ | ⑫ | ⑩ ⑪ | ⑫

① If AGC fails to function properly, reverse primary or secondary of replacement width coil.
② Connect terminal #8 to terminal #7.
③ Connect terminal #9 to terminal "T".

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART No.	NOTES
R48	100KΩ	½	RC30AE104K	BTS-100K	
R49	L 5MEg	½	RC30AE155K	BTS-L 5Meg	
R50	4700Ω	½	RC20AF472K	BTS-4700	
R51	18KΩ	3	RC40AE183K	BTS-18K	
R52	4700Ω	½	RC30AE472K	BTA-4700	
R53	1000Ω	½	RC20AE102K	BTS-1000	
R54	120Ω	½		BTS-120	
R55	1200Ω	½	RC20AE122K	BTS-1200	
R56	22KΩ	2	RC40AE223K	BTP-22K	
R57	470Ω	½	RC20AE471K	BTS-470	
R58	330KΩ	½	RC30AE334K	BTS-330K	
R59	12KΩ	½	RC20AE123K	BTS-12K	
R60	10KΩ	½	RC20AE103M	BTS-10K	
R61	150Ω	½	RC20AE151M	BTS-150	
R62	1800Ω	½	RC20AE181K	BTS-180	
R63	1000Ω	½	RC20AE102K	BTS-1000	
R64	4700Ω	2	RC40AE472K	BTP-4700	
R65	330KΩ	½	RC20AE334K	BTS-330K	
R66	270KΩ	½	RC30AE274K	BTS-270K	
R67	330KΩ	½	RC30AE334K	BTS-330K	
R68	2200Ω	½	RC20AE222K	BTS-2200	
R69	4700Ω	½	RC20AE472K	BTS-4700	
R70	470KΩ	½	RC20AE474K	BTS-470K	
R71	470KΩ	½	RC30AE474K	BTS-470K	
R72	1200Ω	½	RC20AE122K	BTS-1200	
R73	390KΩ	½	RC30AE394K	BTS-390K	
R74	47KΩ	½	RC20AE473K	BTS-47K	
R75	330KΩ	½	RC30AE334K	BTS-330K	
R76	1Meg	½	RC30AE105K	BTS-1Meg	
R77	27KΩ	½	RC20AE273K	BTS-27K	
R78	3900Ω	½	RC20AE392K	BTS-3900	
R78A	22KΩ	½		BTS-22K	
B	22KΩ	½	◆V-11192-1	BTS-22K	
C	8200Ω	½		BTS-8200	
D	3200Ω	½		BTS-3200	
R80	1200Ω	½	RC20AE122K	BTS-1200	
R81	100KΩ	½	RC30AE104K	BTA-100K	

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA Westinghouse PART No.	IRC PART NO.	NOTES
R82	560KΩ	½	RC20AE564K	BTS-560K	
R83	100KΩ	½	RC30AE104K	BTS-100K	
R84	39KΩ	½	RC20AE393K	BTS-39K	
R85	68KΩ	½	RC20AE683K	BTS-68K	Note 1
R86	2.2MEg	½	RC20AE225K	BTS-2.2Meg	
R87	1000Ω	½	RC20AE102K	BTS-1000	
R88	6800Ω	½	RC20AE682K	BTS-6800	
R89	3300Ω	½	RC20AE332K	BTS-3300	
R90	560Ω	½	RC20AE560A	BTS-560	
R91	560Ω	½	RC20AE563K	BTS-560	
R92	3900Ω	½	RC40AE392K	BTS-3900	
R93	33KΩ	½	RC20AE333K	BTS-33K	
R94	1Meg	½	RC20AE105K	BTS-1Meg	
R95	1Meg	½	RC20AE105K	BTS-1Meg	
R96	220KΩ	½	RC20AE224K	BTS-220K	
R97	470KΩ	½	RC30AE474K	BTS-470K	
R98	33KΩ	½	RC20AE183K	BTS-33K	
R99	47KΩ	½	RC20AE473K	BTS-47K	
R100	820Ω	½	RC30AE821K	BTS-820	
R101	56KΩ	1	RC30AE563K	BTA-56K	
R102	370KΩ 5%	½	RC30AE274J	BTS-270 5%	
R103	56KΩ	½	RC30AE583K	BTS-56K	
R104	1000Ω	½	RC20AE102K	BTS-1000	
R105	5600Ω	½	RC20AE562K	BTS-5600	
R106	150Ω	½	RC30AE151M	BTS-150	
R107	470KΩ	½	RC20AE474K	BTS-470K	
R108	100KΩ	½	V-9817-18	PW4-6900	
R109	2.2Ω	1	RRU32R2K		
R110	100KΩ	1	V-9817-18	BTA-100K	
R111A	300Ω	6			
B	1000Ω	7	V-14656-1		
C	5300Ω	7			
R112	230KΩ	½		BTA-230K	Note 2
R113	22KΩ	½		BTS-22K	
R114	390Ω	½		BTS-390	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Westinghouse PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	RCA TYPE No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC ④ L 75A	468VCT 1.250ADC	5VAC ⑤ 6A	V-12805D-2						26R33 ① ③ ⑤
	SEC. 3	SEC. 4	SEC. 5							
	12.6VCT ⑥ 5. 5A									

① Drill new mounting holes.
③ Parallel and phase 5V @ 3A windings for sec. #2.
⑤ Series 6.3V windings for 12.6VCT sec. #3.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	Westinghouse PART No	Halldorson PART No	Merit PART No	RCA PART No.	Ram Replacement PART No.	Stancor PART No.	Thordarson PART No	Triad PART No
T2	Horiz. Output Trans.	V-14346-1	P8411* & P8411-1	HV01-9* & RF80-1	22271 *	X080* & 20UR14 ①	A-8236*①		D-35*
T3	Vert. Output Trans.	V-10909-2	21806	MWC-1①	22STI	V312	A-8141	26S54	A-104X
T4A	Yoke-Horiz. (20MH)	V-12318-3	DF8605③	A-3039	22STI ③	V312 ③	T10F20/43 ③	DY-11A ③	Y-22-1 ③
B	Vert. (37MH)			RF8003 ③					
T5	Horiz. Lin. -(LT-8.5MH)	V-14601-1	RF8003 ②	MWC-6 ②	213R1 ②	20UR15 ②	WC-8 ②	WC-18 ②	WC-125-7 ②
T6	Width-(L-5.3MH)	V-14602-1		MWC-5 ②	213R1 ②	20UR13.5 ②	WC-8 ②	WC-17 ②	WC-125-5 ②

① Drill new mounting holes.
② Use original rear cover and positioning device.
③ Connect horiz. damping network across terminals #3 and #7. Use original network if necessary.
④ Remove damping capacitor across terminals #1 and #2. Use original network if necessary.
⑤ Drill new mounting hole or use original slider and core.
⑥ Connect to coded #3 and #4 terminals.
⑦ Connect to coded blue and green terminals.
⑧ Do not use tap.
⑨ See instructions packed with unit pertaining to yoke damping network.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Correct Connections	Merit Replacement Connections	RCA Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
					6BQ5 Plate lead		10
4	9	9	9	9	4	9	
7	5	5	5	5	4	8	
6	NC	NC	4	NC	8	4	
2	1	1	2	1	7	3	
5	#4 term RF 800	Orange term MWC-1	1	Outer winding 20UR14	5	1	
3	#3 term RF 800	Black term MWC-1	3	Outer winding 20UR14	6	2	
1	#1 & #2 terms RF800 terms MWC-1	Blu. & red terms MWC-1 across	6	Outer winding 20UR14 across			
8 & 2	3 & 1	3 & 1	3 & 4	3 & 4	8 & 1		3 & 4

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Westinghouse PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	NOTES
T7	7.2KΩ	3.3Ω	V-14080-2	A-3878 ①	A-2931 ①	S-7X ①	21113 ①	20S46 ①	① Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS SIZE	RATINGS FIELD	RATINGS V. C. IMP.	REPLACEMENT DATA Westinghouse PART No.	JENSEN PART No	QUAM PART No	NOTES
SP1	5 1/4"	PM	3.2Ω	V-10030-1	52S3G	52A1	① Used in model W-8387B1B
	6	PM	3.2Ω	V-12143-1 ①	62S	6A1	② Used in models W-8877B2, W-8448X1,
	10	PM	3.2Ω	V-9770-1 ②	102S1	10A31	W-9438X1 and W-8448X1

COILS (RF-IF)

ITEM No.	USE	DC RES PRI	DC RES SEC	REPLACEMENT DATA Westinghouse PART No.	MEISSNER PART No	MERIT PART No.	MILLER PART No	NOTES
L1	VHF Ant. Trans.	.6Ω	0Ω					
L2	VHF Ant. Trans.	.6Ω	0Ω					
L3	IF Trap	.2Ω						
L4	FM Trap	0Ω						
L5	IF Trap	.2Ω						
L6	Fil. Choke	0Ω						
L7	VHF Neut. Coil	0Ω						
L8	VHF Ant. Coil	0Ω						Channel 13
L9	VHF Ant. Coils	0Ω						
L10	UHF Input Coil	1.6Ω						Channel 13
L11	VHF RF Coil	0Ω						
L12	VHF RF Coils	0Ω						
L13	VHF Mixer Grid Coil	0Ω						Channel 13
L14	VHF Mixer Grid Coils	0Ω						
L15	Fil. Choke	0Ω						
L16	VHF Feed-back Coil	0Ω						Channel 13
L17	VHF Osc. Coil	0Ω						
L18	VHF Osc. Coils	0Ω						
L19	VHF Osc. Coil	0Ω						Low Band
L20	VHF RF Choke	1.4Ω						
L21	VHF Conv. Plate	.3Ω	0Ω					
L22	1st Video IF	0Ω		V-9825-8	17-4634*		6210*	
L23	41.35MC trap	0Ω		V-11973-1				
L24	Fil. Choke	0Ω		V-9826-2	19-1000	TV-189	4602	L 1 Microhenries
L25	2nd Video IF	.5Ω	.4Ω	V-9879	17-4631*		6231	
L26	47.25MC trap	0Ω		V-11973-1	30-1047			
L27	Fil. Choke	0Ω		V-9826-2	19-1000	TV-189	4602	L 1 Microhenries
L28	3rd Video IF	.5Ω	.4Ω	V-9879	17-4581*		6231	
L29	4th Video IF	.5Ω		V-12128-1				Includes caps, coil and crystal CK706-1N64
L30	Series Peaking Coil	4.7Ω		V-9902-5	19-3125		6153	115 Microhenries
L31	Shunt Peaking Coil	1Ω		V-9886-1	19-1005	TV-180	4634	14 Microhenries
L32	Fil. Choke	0Ω		V-9826-2	19-1000	TV-189	4602	L 1 Microhenries
L33	4 SMC trap	1.1Ω		V-9882-9	20-1004	TV-151	1469	
L34	Series Peaking Coil	6Ω		V-9915-7	19-3180	TV-184	6180	170 Microhenries
L35	Shunt Peaking Coil	13Ω		V-9915-8	19-3300	TV-185	6155	290 Microhenries
L36	Series Peaking Coil	1Ω		V-9886-1	19-1005	TV-180	4634	14 Microhenries
L37	1st Sound IF	5Ω		V-9882-5	17-3400	TV-151	1470	
L38	2nd Sound IF	1.5Ω		V-9882-3	17-2400	TV-181	1470	
L39	RF Choke	14Ω		V-9915-2	19-3300		6848	350 Microhenries
L40	Fil. Choke	0Ω		V-9886-2	19-1000	TV-189	4602	1.1 Microhenries
L41	Bandstrate Coil	7Ω		V-11398-1	17-1031*	TV-189	1470A	
L42	Fil. Choke	0Ω		V-9886-2	19-1000	TV-189	4602	1.1 Microhenries
L43	Horiz. Osc.	75Ω		V-9764	19-1078		6210	

* Use one winding only.
◆ Detune 12KΩ.
• Drill mounting holes.

FILTER CHOKE

ITEM No	RATINGS TOTAL DIRECT CURRENT	RATINGS D C RESISTANCE	RATINGS INDUCTANCE @ CURRENT 1000 ~(z)	REPLACEMENT DATA Westinghouse PART No	Stancor PART No	Merit PART No.	Triad PART No	Halldorson PART No	Thordarson PART No
L44	.250A	41Ω	1.3HY	V-8475J-3	C-3336①	C-3996①	C-47X ①	C5037 ①	20C44 ①

① Drill one new mounting hole.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Westinghouse PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No FUSE	HOLDER
M1	3AG	1/4A-250V	V-8171-8	V-11966-1	312.250 (3AG 1/4A 250V)	357001	AGC 1/4	4405

WESTINGHOUSE MODELS H-838K218, H-838KU218, H-841T21, H-841TU21, H-842T21, H-842TU21, H-843K21, H-843KU21, H-844K21, H-844KU21, H-847K21, H-847KU21, H-848X21, H-848XU21, H-861T21, H-861TU21, H-862T21, H-862TU21, H-863T21, H-863TU21, H-864T21, H-864TU21, H-866T21, H-866TU21, H-867T21, H-867TU21, H-868T21, H-868TU21, H-871T21, H-871TU21, H-872T21, H-872TU21 (CH. V-2313-15, -25, -35, V-3333-101, -122, -126, -201, -301)

PARTS LIST AND DESCRIPTIONS (Continued)

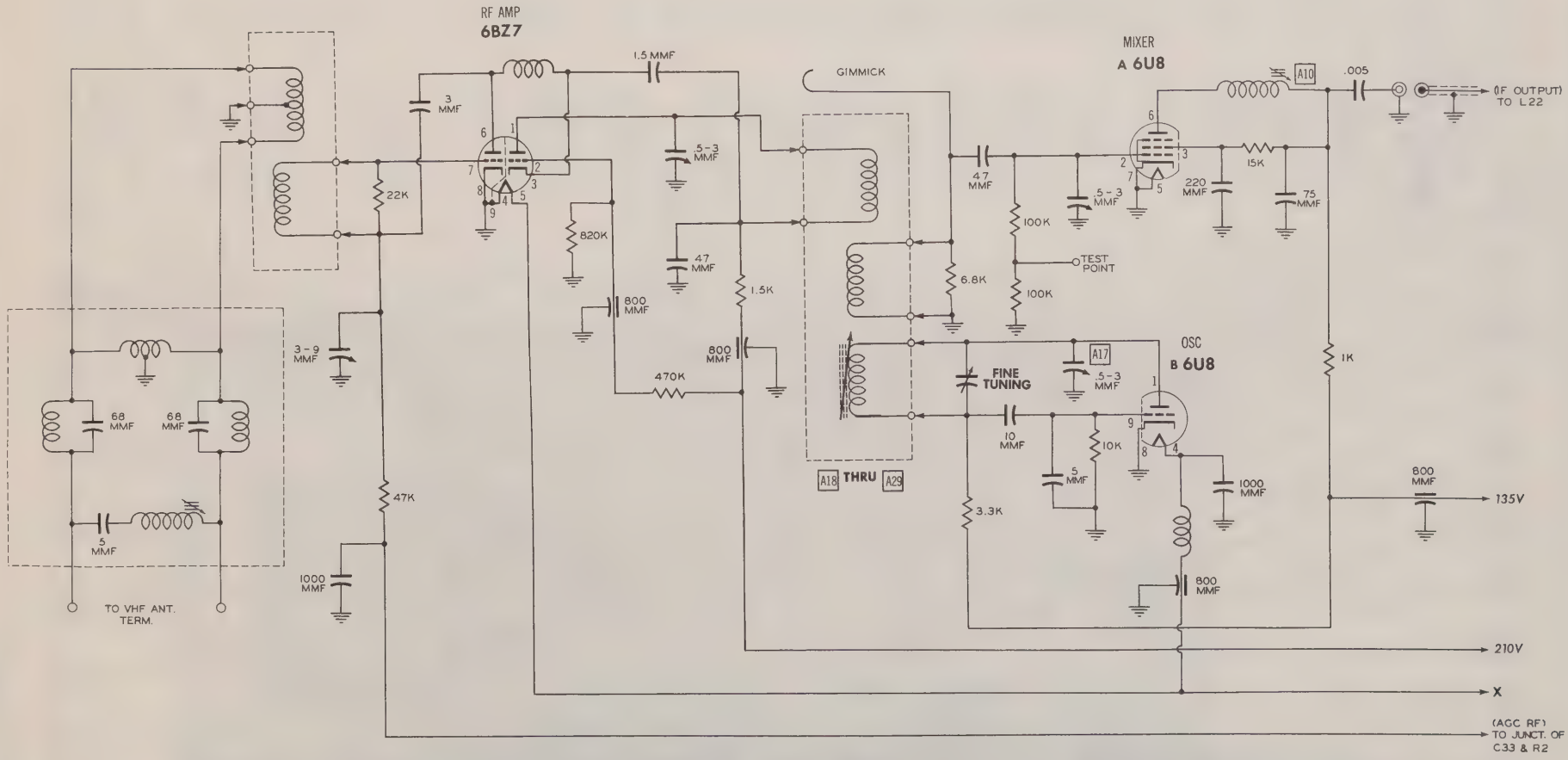
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Westinghouse PART No.	FEDERAL PART No.	SYLVANIA PART No.	
M2	ST47 †	V-8634-2	1N82	1N82 or 1N82A	UHF mixer
M3	CK706A*		1N64A	1N60 or 1N132	Video Det.

† Some versions may use a 1N82 crystal diode in this application.
* Some versions may use a 1N64 crystal diode in this application.

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M4	Dial Light		#55, Bayonet
M5A	Tuner	V-14130-1	VHF-UHF Combination - Ch. V-2323-101, -201, -301
B	Tuner	V-14989-1	VHF (part of VHF-UHF tuner combination) Ch. V-2323-101, -201, -301
C	Tuner	V-14990-1	UHF (part of VHF-UHF tuner combination) Ch. V-2323-101, -201, -301
D	Tuner	V-12400-1	VHF - Ch. V-2323-124, V-2323-122
E	Tuner	V-14170-2	VHF- Ch. V-2313-15, -25, -35
M6A	Tuner	V-11972-1	UHF - Ch. V-2323-124
B	Tuner	V-12390-1	UHF - Ch. V-2323-122
M7	Trap	V-8782	VHF Ant. Input Filter - Ch. V-2313-15, -25, -35
M8	Centering Device		Part of yoke cover (T5)
M9	Ion Trap	V-9784-5	
B1	Trimmer Cap.	V-11228-2	Multivibrator trimmer (5-80MMF)
	Cabinet	V-1375-10	Models H-871T21, H-871TU21
	Cabinet	V-1375-11	Models H-872T21, H-872TU21
	Cabinet	V-1347-1	Models H-841T21, H-841TU21
	Cabinet	V-1347-2	Models H-842T21, H-842TU21
	Cabinet	V-1374-10	Models H-838K21B, H-838KU21B
	Cabinet	V-1372-10	Models H-847K21, H-847KU21
	Cabinet	V-1372-11	Models H-848K21, H-848KU21
	Cabinet	V-1348-10	Models H-843K21, H-843KU21
	Cabinet	V-1348-11	Models H-844K21, H-844KU21
	Cabinet	V-1346-2	Models H-861T21, H-861TU21
	Cabinet	V-1346-3	Models H-862T21, H-862TU21
	Cabinet	V-1308-25	Models H-867T21, H-867TU21, A
	Cabinet	V-1308-10	Models H-868T21, H-868TU21
	Cabinet	V-1346-8	Models H-863T21, H-863TU21
	Cabinet	V-1346-9	Models H-864T21, B, H-864TU21, B
	Cabinet	V-1346-10	Models H-865T21, B, H-865TU21, B
	Cabinet	V-1346-11	Models H-866T21, B, H-866TU21, B
	Knob	V-14426-3	Channel Selector - Models H-867T21, H-838K21B, H-871T21, H-872T21
	Knob	V-14426-1	Channel Selector - Models H-861T21, H-862T21, H-865T21B, H-868T21
	Knob	V-14229-3	Channel Selector - Models H-843K21, H-844K21, H-847K21, H-848K21, H-841T21, H-842T21
	Knob	V-14426-7	Channel Selector - Model H-864T21, B
	Knob	V-14426-8	Channel Selector - Models H-863T21, H-865T21, H-866T21
	Knob	V-14422-1	Channel Selector - Models H-867TU21, H-868TU21, H-871TU21, H-872TU21, H-861TU21, H-862TU21, H-865TU21B
	Knob	V-14426-9	Channel Selector - Model H-866T21B
	Knob	V-14520-1	Channel Selector - Models H-841TU21, H-842TU21, H-847KU21, H-848KU21, H-843KU21, H-844KU21
	Knob	V-14671-3	Channel Selector - Model H-838KU21B
	Knob	V-14422-4	Channel Selector - Model H-864TU21, B
	Knob	V-14422-5	Channel Selector - Models H-863TU21, H-865TU21, H-866TU21
	Knob	V-14422-6	Channel Selector - Model H-866TU21B
	Knob	V-14423-1	VHF Fine Tuning - Models H-867TU21, H-861TU21, H-862TU21, H-841TU21, H-842TU21, H-847KU21, H-848KU21, H-843KU21, H-844KU21, H-863TU21, H-864T21B, H-864TU21, H-865T21B, H-865TU65, H-866T21B, H-866TU21
	Knob	V-14423-3	VHF Fine tuning - Models H-871TU21, H-872TU21
	Knob	V-12930-4	Fine Tuning - Models H-838K21B, H-838KU21B
	Knob	V-14423-2	VHF Fine Tuning - Models H-838K21B, H-838KU21B
	Knob	V-12930-3	VHF Fine Tuning (Models H-867T21, H-868T21) & UHF Tuning (Models H-867TU21, H-868TU21)
	Knob	V-12930-1	VHF Fine Tuning (Models H-861T21, H-862TU21, H-841T21, H-842T21, H-847K21, H-848K21, H-863T2, H-864T21, B, H-865T21, B, H-866T21, B, H-843K21, H-844K21) & UHF Tuning (Models H-861TU21, H-862TU21, H-841TU21, H-842TU21, H-847KU21, H-848KU21, H-843KU21, H-844KU21, H-863TU21, H-864TU21, H-865TU21, H-866TU21
	Knob	V-12930-4	VHF Fine Tuning (Models H-871T21, H-872T21) & UHF tuning (Models H-871TU21, H-872TU21)
	Knob	V-12913-3	On-off-volume - Models H-867T21, H-867TU21, H-871T21, H-871TU21, H-872T21, H-872TU21, H-838K21B, H-838KU21B
	Knob	V-12913-1	On-off-volume - Models H-868T21, H-868TU21, H-861T21, H-861TU21, H-862T21, H-862TU21, H-841T21, H-841TU21, H-842T21, H-842TU21, H-847K21, H-847KU21, H-848K21, H-848KU21, H-843K21, H-843KU21, H-844K21, H-844KU21, H-865T21B
	Knob	V-12913-9	On-off-volume - Models H-864T21, B
	Knob	V-12913-10	On-off-volume - Models H-863T21, H-865T21, H-866T21
	Knob	V-12913-11	On-off-volume - Models H-866T21B
	Knob	V-12914-4	Contrast - Models H-871T21, H-871TU21, H-872T21, H-872TU21, H-838K21B, H-838KU21B
	Knob	V-12914-3	Contrast - Models H-867T21, H-867TU21, H-868T21, H-868TU21
	Knob	V-12914-1	Contrast - Models H-861T21, H-861TU21, H-862T21, H-862TU21, H-841T21, H-841TU21, H-842T21, H-842TU21, H-847K21, H-847KU21, H-848K21, H-848KU21, H-843K21, H-843KU21, H-844K21, H-844KU21, H-863T21, H-863TU21, H-864T21, B, H-864TU21, H-865T21, B, H-865TU21, H-866T21, B, H-866TU21
	Knob	V-14425-1	UHF Dial - Models H-871TU21, H-872TU21, H-867TU21, H-868TU21, H-861TU21, H-862TU21, H-863TU21, H-864TU21, B, H-865TU21, B, H-866TU21, B
	Knob	V-14673-1	UHF Dial - Model H-838KU21B
	Knob	V-14219-1	UHF Dial - Models H-841TU21, H-842TU21, H-847KU21, H-848KU21, H-843KU21, H-844KU21



ALTERNATE VHF TUNER USED ON SOME VERISIONS

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ALTERNATE TUNER SCHEMATIC

TROUBLE SHOOTING AIDS (cont)

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3924

HIGH VOLTAGE

LOSS OF HIGH VOLTAGE

Check by substitution V17, V18, V19 and V20. Check M1 fuse. Check waveform W16.

If Satisfactory	If Unsatisfactory
Check T2, T4A, T5, T6, C96, C98, C95, R108 and other associated components.	Check C92, C94, C91, L43, R104, R101 and other associated components.

INSUFFICIENT HIGH VOLTAGE

Check by substitution V18, V19, V21 and V22. Check C94, C93, C92, C99, R105, R108, T2, T4A and other associated components.

BLOOMING

Check by substitution V18, V19, V20, V21 and V22. Check R110, R108, C94, C97, C99 and other associated components.

GENERAL

RASTER, SOUND, NO PICTURE

Follow procedure outlined under "Loss of Video".

RASTER, PICTURE, NO SOUND

Follow procedure outlined under "Weak or No Sound".

RASTER, NO SOUND, NO PICTURE

Check by substitution V1, V2, V3, V4, V5, V6 and V7. Check video IF components for failure or change of value.

NO RASTER, NO SOUND

Follow procedure outlined under "Dead Set".

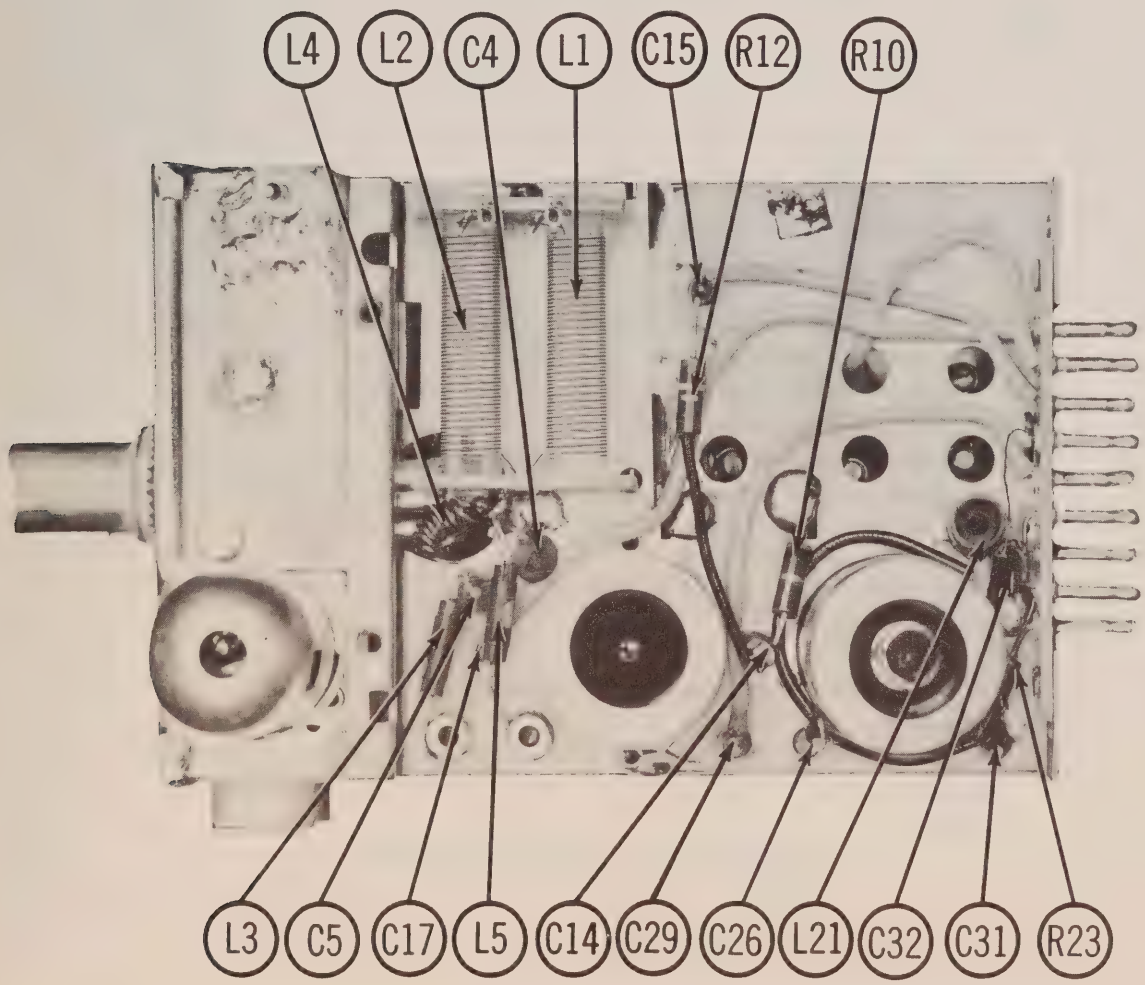
KEYSTONE EFFECT

Check T4 and its associated components.

INTERMITTENT STREAKS

Check high voltage section for corona discharge and arcing.

Symptoms shown are assumed and are not indicative of the quality and workmanship of this equipment.



UHF TUNER TOP VIEW

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustments of the VHF Tuner Oscillator Circuit may be accomplished by removing the Channel Selector and Fine Tuning knobs.

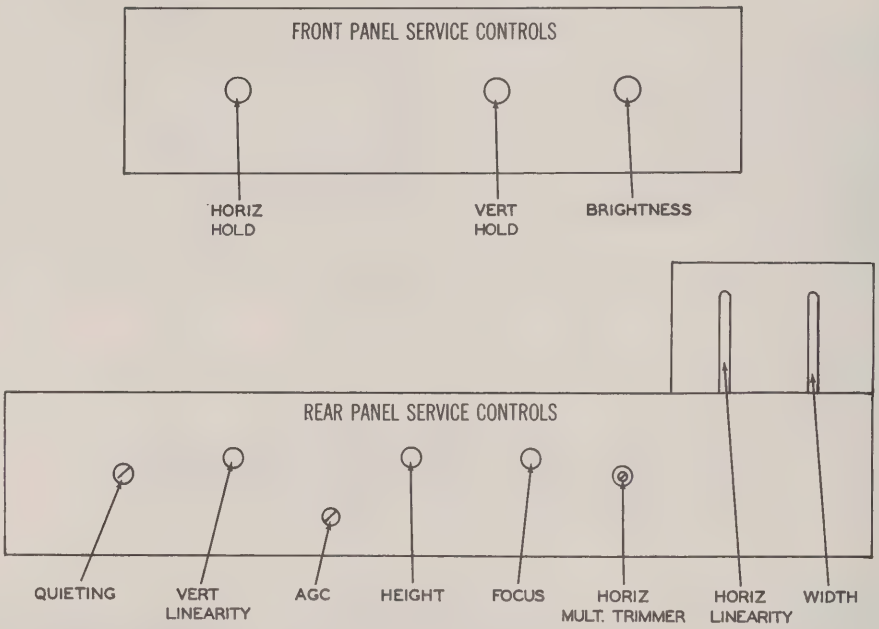
PICTURE TUBE SAFETY GLASS CLEANING

To clean safety glass, remove 5 push-on type control knobs. Remove 2 wood screws located under knobs and 2 wood screws behind the control door. Remove escutcheon panel. Remove 4 wood screws from bracket holding safety glass. Use extreme caution when removing safety glass.

PICTURE TUBE REMOVAL

For picture tube removal it is necessary to remove chassis. (See disassembly instructions.)

SERVICE ADJUSTMENT LOCATION



SPECIAL ADJUSTMENTS

AGC CONTROL ADJUSTMENT

Tune in the strongest available TV station.

Turn the AGC control clockwise until the picture begins to show signs of overload; or if the signal is weak, until the "snow" becomes pronounced. Turn the control counter clockwise until the "snow" is minimum or evidence of overload disappears. Check all available channels for excessive "snow" or signs of overload.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the Horiz. Oscillator, it is necessary to remove the rear cover and supply power to set. Adjustment is located on top of chassis. Set the horiz. hold control at the center of its range and adjust the Horiz. Osc. slug L43 until picture synchronizes horizontally. (For location see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate sound IF detector buzz, adjust the quieting control located on the rear of the chassis for maximum volume and minimum buzz.

FUSES

One fuse is used for Horiz. Sweep Circuit protection. (For location see Tube Placement Chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube, located flush against the deflection yoke. Rotate the two rings around the neck of the tube until the picture is properly centered.

DISASSEMBLY INSTRUCTIONS

1. Remove 5 push-on type control knobs and UHF dial from front panel.
2. Remove 8 metal screws. Remove rear cover.
3. Disconnect 2 speaker leads.
4. Remove 2 speaker nuts. Remove speaker.
5. Remove 6 chassis bolts. Remove chassis.

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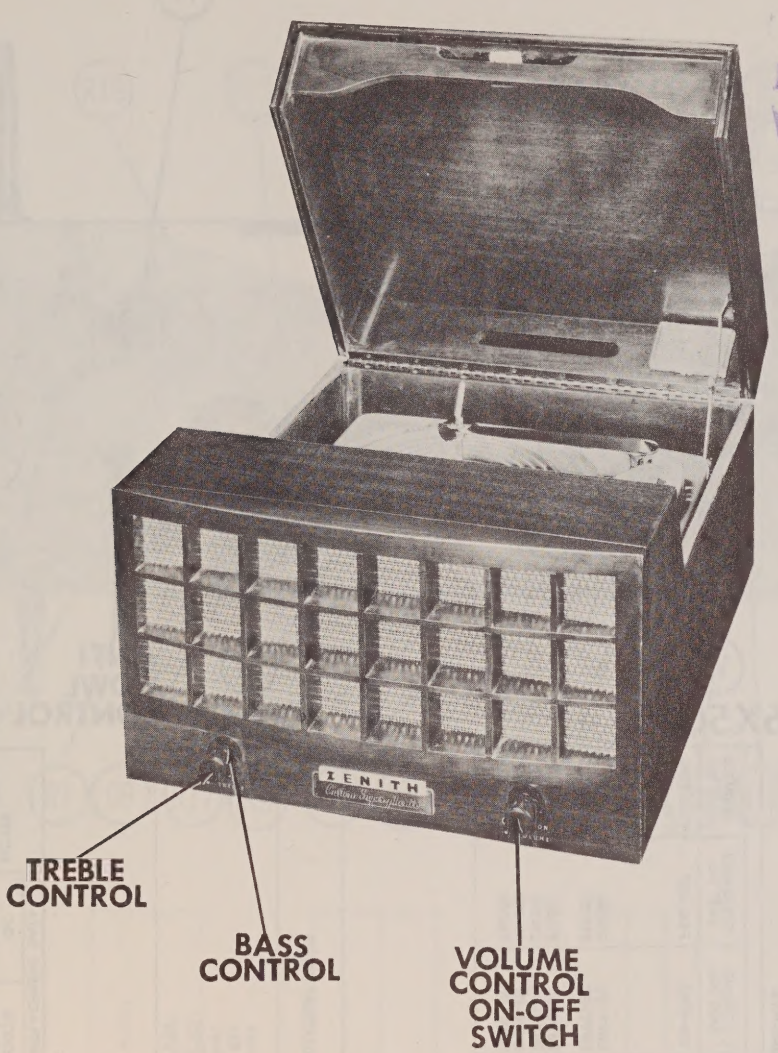
ZENITH MODELS HF14, E, HF15E,
R, HFR14, E, HFR15, E (Ch. 3M02)



ZENITH MODELS HF14, E, HF15E,
R, HFR14, E, HFR15, E (Ch. 3M02)

TRADE NAME	Zenith Models HF14, E, HFR14, E, HF15E, R, HFR15, E (Ch. 3M02)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AU7 AF Amp., 6V6GT Output, 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .31 Amp. @ 117 Volts AC

RECORD CHANGER UNIT - ZENITH MODEL S-14061

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL HF14 (Ch. 3M02)

TUBES (SYLVANIA, GENERAL ELECTRIC, WESTINGHOUSE)

ITEM No.	USE	REPLACEMENT DATA		RETMA BASE TYPE	NOTES
		ZENITH PART No.	STANDARD REPLACEMENT		
V1	AF Amplifier	12AU7	12AU7	9A	
V2	Output	6V6GT	6V6GT	7AC	
V3	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA								
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	350	22-2574	AFH4-53		D046		FP376.9	TM-4082	PLQ-8117	TVL-3786
B	■40	350						TC29			TVA-1206
C	20	350									
D	40	25									
C2	110		22-5	SI110	D6-111	G043	GP2K-111	UC-531			
C3	.1	600	22-417	P688-1	DF-104	CUB6P1		PT601	IMP6-P1	330601	6TM-P1
C4	.2	200	22-467	484-2		CUB2P22		PT402	IMP2-P2	330202	2TM-P2
C5	10000		22-3	BPD-01	DD-103	K082	811-01	DC-511			
C6	.01	600	22-669	P688-01	D6-103	CUB6S1	GP2-333-103	PT611	IMP6-S1	330611	6TM-S1
C7	.5	120	22-2573	P288-5		CUB2P5		PT405	IMP2-P5	330205	2TM-P5
C8	.003	600	22-288	P688-003	D6-302	CUB6D3	GP2-333-302	PT623	IMP6-D3	330623	6TM-D3
C9	.5	120	22-2573	P288-5		CUB2P5		PT405	IMP2-P5	330205	2TM-P5
C10	10000		22-3 ①	BPD-01	DD-103	K082	811-01	DC-511			

① Not used in all versions.

CONTROLS

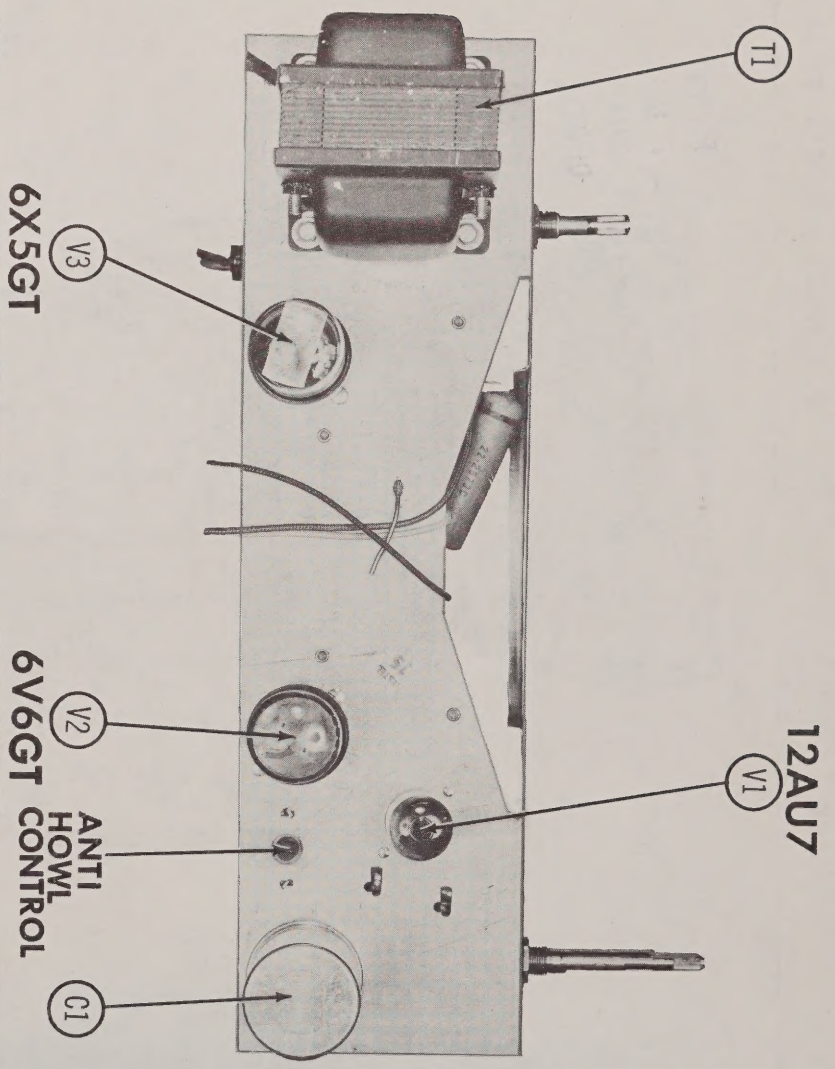
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	MALLORY PART No.	
R1A	1Meg	½	63-2975	Q11-137	A47-1Meg-S	AB-697	U-54	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWE-12	KB-1	US-26	Attach to R1A
R2A	10KΩ	½	63-2974				UF14R	Bass - Panel
B	250KΩ	½					UR254A	Treble - Rear
R3A	10KΩ	½	63-2973	Q11-116	A47-10K-S	BX-69	U-20	Feedback
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Not Req.	Attach to R3A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R4	10Meg	½		BTS-10Meg	
R5	1800Ω	½		BTS-1800	
R6	68KΩ	½		BTS-68K	
R7	3900Ω	½		BTS-3900	
R8	1000Ω	½		BTS-1000	
R9	68KΩ	½		BTS-68K	
R10	1800Ω	½		BTS-1800	
R11	470KΩ	½		BTS-470K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	ZENITH PART No.	IRC PART No.	
R12	180Ω	1		BTA-180	
R13	22KΩ	½		BTS-22K	
R14	4700Ω	½		BTS-4700	
R15	1000Ω	½		BTS-1000	
R16	330Ω	½		BTS-330	
R17	5600Ω	1		BTA-5600	
R18	220Ω	1		BTA-220	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.
T1	117VAC @.31A	516VCT .057ADC	6.3VAC @1.3A		95-1392	PC-8420①	P-3148 ①	R-10A①②	P9204 ②	26R31U ①

① Drill new mounting holes.
② Tape 5V winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Stancor PART No.	Merit PART No.	Triad PART No.	Halldorson PART No.	Thordarson PART No.	
T2	7.1KΩ	3.2Ω	95-1391	A-3824		S-9X	Z1011	26S48 ①	① Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS			REPLACEMENT DATA			NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1	7½"	PM	3.6Ω	49-758	ST-117 Mod. P8T	8A21	
SP2	3½"	PM	12Ω	49-759		3A15T	

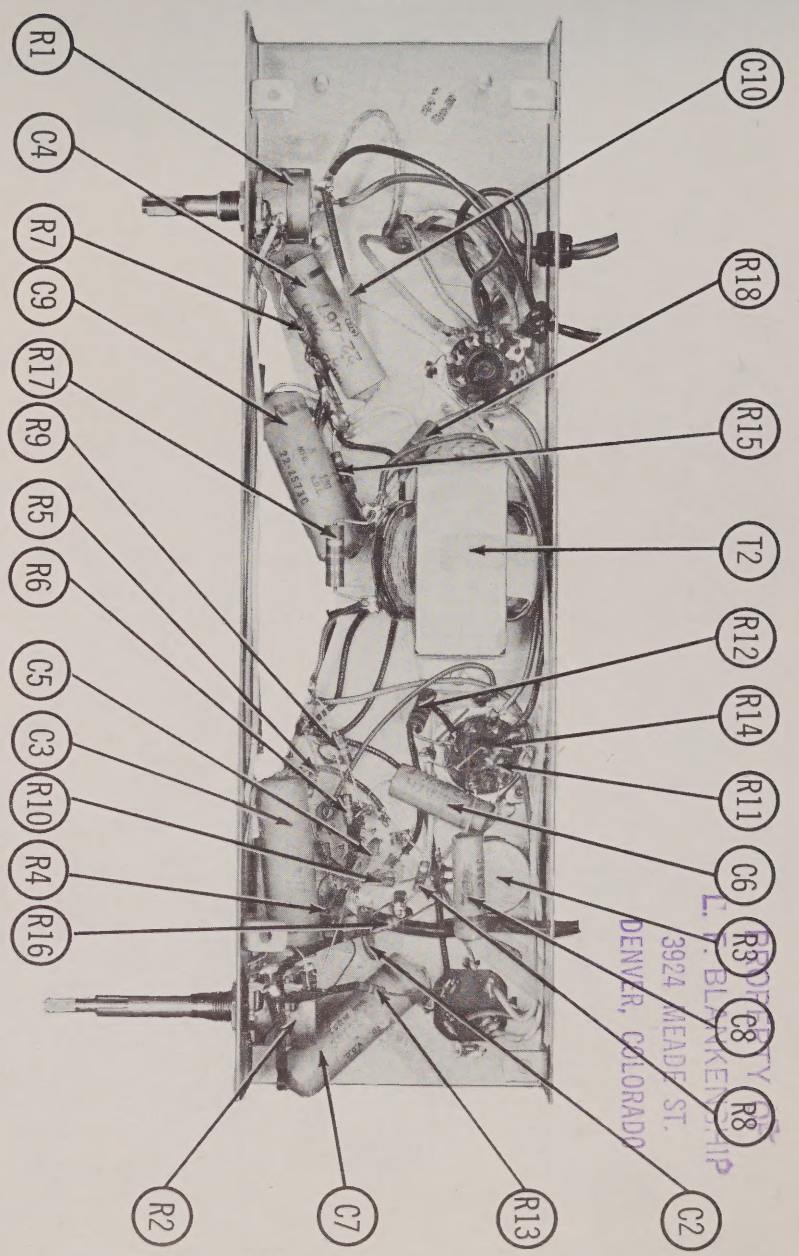
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA						REMARKS
	ZENITH PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	142-72							
M2	142-71							

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
	Cabinet	14-1696E	Model HF-15E , HFR-15E
	Cabinet	14-1696R	Model HF-15R, HFR-15R
	Cabinet	14-1705	Model HF-14 , HFR-14
	Cabinet	14-1705E	Model HF-14E, HFR-14E
	Knob	46-1300	Tone & Dummy - Model HF-15R, HFR-15R
	Knob	46-1301	Tone & Dummy - Models HF-14, 15E, 14E, HFR-14, 15E,14E
	Knob	46-1317	Volume & Tone - Model HF-15R, HFR-15R
	Knob	46-1318	Volume & Tone - Models HF-14, 15E, 14E, HFR-14, 15E,14E

CHASSIS—BOTTOM VIEW



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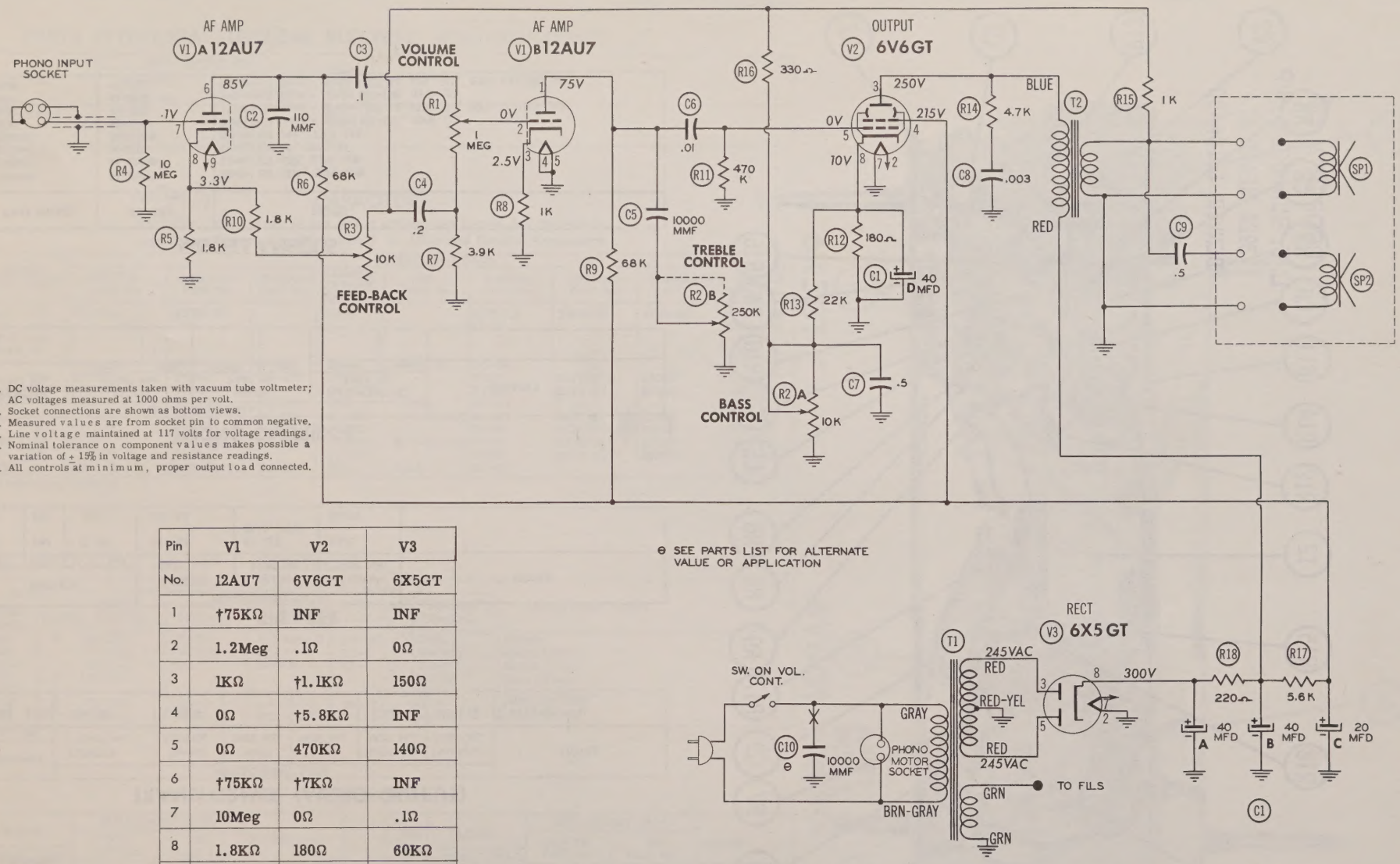

Pin No.	V1 12AU7	V2 6V6GT	V3 6X5GT
1	†75KΩ	INF	INF
2	1.2Meg	.1Ω	0Ω
3	1KΩ	†1.1KΩ	150Ω
4	0Ω	†5.8KΩ	INF
5	0Ω	470KΩ	140Ω
6	†75KΩ	†7KΩ	INF
7	10Meg	0Ω	.1Ω
8	1.8KΩ	180Ω	60KΩ
9	.1Ω		

† MEASURED FROM PIN 8 OF V3

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